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Table of Contents ..... *Text Page* 660
Advertisers' Index ..... *Advertising Pages* 71-73
Classified Advertisements ..... *Advertising Pages* 60-66
Publiciy Page ..... *Advertising Page* 59
Rubber Buyers' Directory ..... *Advertising Pages* 74-112

Hard Rubber Sonorescence

THE remarkable and varied qualities possessed by vulcanite are generally known. Its great value as an insulator, shown in connection with electric lighting, the telephone, telegraph and radio instruments; its use in surgery, medicine and the laboratory have been matters of general knowledge for decades. That it is sonorescent, in other words that it translates the vibrations of light into sound, however, is not widely known. Experiments have shown that if the light beam be intermittent or harmonically variable in intensity, hard rubber in diaphragm form will emit from its surface a sound readily revealed with a microphone or a telephone earpiece, that reproduces in its pitch or its complexity all the characteristics of the ray striking the rubber.

In hard rubber composed of rubber and sulphur, the sulphur is practically inert to the light rays, although activated through combination with rubber. What is needed therefore, is a vulcanizing agent that is sonorescent.

The element selenium has the same qualities and resembles sulphur chemically in that it is a true vulcanizing agent and it is sonorescent. One of the early experimenters using selenium instead of sulphur produced "elastic selenide of caoutchouc," which was really an excellent soft rubber. If, therefore, hard rubber made up of selenium and rubber could be produced the sonorescence might be much greater than if sulphur were used. Or hard rubber of the sulphur sort acted upon by light rays, the sound magnified by a more powerful microphone might even realize the poet's dream in giving to the world the "music of the spheres." At all events the subject is fascinatingly interesting.

Rubber Thread Looking Up

THE leather belt for some years past has been more popular than suspenders. The result as far as the rubber trade is concerned was a lessened use of rubber thread. Nor did the increased use of thread in golf balls and in elastic fabric novelties really make up for the loss. No less potent a body than the United States National Clothiers who plan styles for men and whose fiat makes or unmakes staple goods as well as novelties has declared in favor of suspenders. This is excellent and the makers of rubber thread, as well as the weavers of elastic fabrics, will once more come into their own.

Loss Sharing Plan Wanted

WONDER is sometimes expressed at the general lack of enthusiasm among trade leaders over profit-sharing plans; yet the reason for their seeming indifference is simple. They have not found such plans elastic enough. They are liberal with and considerate of their employes and appreciate the wisdom of giving them every reasonable incentive to do their best; but they feel that all schemes to supplement wage paying should have what the latter lacks, a propelment of give and take in both letter and spirit. Like a good rule every such plan should work both ways; it should be really reciprocal in crediting advantages and debiting disadvantages and in allowing for setbacks as well as for forward strides.

When a manufacturer shares freely with workers in a flush period it is not unfair for him to expect workers to also share with him some of the loss when buyers grow scarce and profits vanish, when taxes mount and credits contract, when deficits take the place of dividends and when sometimes the workers' pay is borrowed money. It seems hard to make many workers understand that all is not cakes and ale with their employers. To them good times mean merely holding their jobs without a cut in pay. When the ordinary profit-sharing plan is established, seeing no reason why it should ever need re-

vision downward, he promptly raises his living expenses and counts on his profit allotment as confidently as he would upon the unfailing interest on a government bond. Fat and lean years are alike to him; it does not concern him if his employers have not earned anything over operating charges; if his share be not forthcoming he concludes that he has been tricked and ever afterwards nurses a grievance.

Sometime a really fair, practical, self-conforming plan may be devised, one that will in a sense automatically adapt itself to at least the major vicissitudes of business; but until some such scheme be worked out and properly tried most of the captains of industry will prefer to let well enough alone.

Standardization and Progress

LEADERS in the rubber industry who have long hoped for standardization of raw materials and finished products are much heartened by the announcement that the American Engineering Standards Committee is redoubling its efforts to accomplish the same salutary changes in American industry for which rubber leaders have so zealously labored. This body, representing some of the largest and most progressive interests in America, declares that the time is particularly opportune for the launching of a campaign for a closer, more active, and far-reaching cooperation between the Federal Government and industry for general standardization. It aims to greatly expand the scope of the work done by the admirable Federal research organizations and to coordinate such activities with the efforts of private enterprises that a great, comprehensive national program of standardization may soon be evolved.

The point is stressed that if America is to retain and enlarge its foreign trade it must soon develop such cooperation. It may even need it to safeguard its domestic trade. Just now Germany furnishes an impressive lesson on the value and the urgency of such a course. There, an intensive, all-inclusive program of industrial efficiency and standardization is being carried out under the guidance of leaders in 5,000 manufacturing concerns with the avowed object of building up an industrial structure that will be far more formidable than even the powerful trade combination of pre-war days. In Great Britain and other European countries similar steps to acquire a large share of world trade are being taken on an unprecedented scale. It is becoming increasingly evident that unless America soon adopts similar tactics it may before long be confronted with a rapid dwindling in sales abroad and even very keen competition in sales at home, a condition that might only be relieved with a tariff so high that it would not merely prohibit importations but cut off revenue as well.

American manufacturers have been too prone to regard governmental interest in their affairs as intermeddling, as much a hindrance as a help, just as many have always held that general industry and national administration should be kept as far apart as church and state. They would just as lief go it alone, comforted with success in the past, and depending upon their excellent products and proverbial enterprise to insure continued good fortune. But times change, and the A. E. S. C. shows how we must change with them if we are to even remain in the race. Not only does it demonstrate how by such cooperation American industry may best gird itself to compete with a menace threatened from abroad, but it also shows how American manufacturing may be made more profitable, even at a lower price range, how great waste may be eliminated, sharp peaks and severe slumps be averted, and, not the least important advantage of all, how standardization and simplification effected with government cooperation can effectively stabilize employment.

Extracting the Splinters From Rubber

RUBBER manufacturers are an exceedingly long-suffering and philosophic body of men. From the time of Goodyear they have been purchasing crude rubber that contained anywhere from 10 to 50 per cent of dirty water, sand, bark and mud. This was varied at times by big stones, cast-off clothing, indeed anything that made weight and could be hidden by a film of gum. Patiently the manufacturers washed and refined, taking the losses as one of the unavoidable incidents of their trade. They knew that jungle work by natives could not easily be controlled and that clean wild rubber was not wholly possible.

With the advent of the plantation rubber however, clean rubber seemed assured. To be wholly fair it was clean as compared with African sorts. It was also free from water. But it was not clean enough to put upon the mixer without washing. Surface dirt in the shape of splinters from packing cases was the trouble and still is. That this will be changed is possible, but not without some effort on the part of the buyers. As the matter stands certain brands of plantation rubber are free from splinters. Why should not a white list be prepared to be circulated among rubber buyers, this list to comprise the brands that come to the manufacturer free from splinters or other foreign matter. Such rubber would have the preference and very soon the rest of the producers seeing their market slipping away would reform.

If the fault was at the plantation it would be quickly remedied. If the London repackers were at fault the plantations would set them straight. A black list of the offenders would be useless, but a white list of clean rubber producers would prove a benefit to the whole industry.

A TEXAS NEWSPAPER ANNOUNCES THAT THERE HAS recently been discovered a new substance called isoprene from which it is possible to make synthetic rubber. The same journal will doubtless soon announce the fall of Fort Sumter.

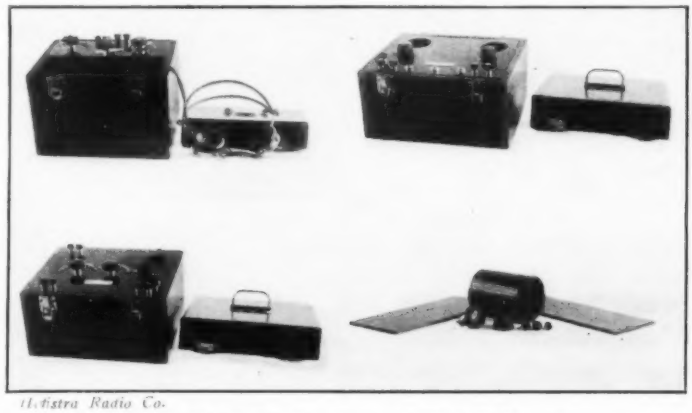
Radio Equipment and Its Dependence on Rubber[1]

Present and Future Outlook—Transmission of Radio Signals—Rubber Parts of Receiving Sets—Making Rubber Radio Parts

By William S. Cobb, Mechanical Engineer

BUT a comparatively short time ago the world learned that electrical signals could be transmitted across the ocean and between distant points without the aid of wires. It was Marconi, an Italian scientist and inventor, who gave to the world one of the greatest inventions of the age, wireless telegraphy. Less than twenty years have since elasped, and today the human voice and various other sounds are made to travel great distances through space by what is now known as radio telephony or the wireless telephone.

Prior to and during the World War very little progress was made in wireless telephony, and less than two years ago it was a problem involving experimental and research work, engaging the attention of electrical engineers and wireless experts the world over, to perfect a wireless telephone that would be a commercial success. That this has been accomplished is most apparent and we are now receiving, daily and hourly, from the broadcasting stations, programs which include music, daily news events, sporting topics, weather forecasts, concerts and lectures. Voices of famous opera stars are heard from afar, while many other voices are heard through the air by thousands of persons on both land and water, and it is safe to say 1,000,000 persons "listen in" daily to the programs that are sent out.



Atlastra Radio Co.

Typical Medium Priced Receiver Sets and Hard Rubber Components

Present Radio Equipment Manufacture and Future Outlook

A conservative estimate of the number of radio sets in use at the present time is about 610,000, and the value, $25,000,000. It is believed that these figures will be doubled by the end of the present year.

The radio industry has increased so rapidly during the past few weeks, that manufacturers of the higher grade instruments have more business than they can handle and orders booked many months ahead. The same may be said of the smaller manufacturers, either those who make the various components and assembled units, or those who make a specialty of some particular part such as the variometer, condenser, head set, amplifiers, etc. Hundreds of small concerns have recently been incorporated to produce this line of radio work, and many have booked large orders.

Not only has this sudden and great popularity of the radio made enormous demands on manufacturers of wireless equipment, storage batteries, and electrical equipment, but other great industries contribute their product, and increased activity is seen in all these lines. Machinery and tools, wood, brass, copper and other metals, cotton, hard rubber and other plastics, all contribute to make up the complete wireless telephone outfits. A great demand is being made on hard rubber manufacturers for hard rubber sheet and molded goods. Many concerns are starting the manufacture of hard rubber molded goods and some are also contemplating the manufacture of hard rubber sheet.

Wireless Transmission of Radio Signals

The sending of radio signals is carried on through the creation of radio waves which are made up of both electromagnetic and electrostatic waves, that is, amperes of current flowing in a wire and a pressure, E. M. F.'s in volts between the wire and the ground. This electrical pressure is made to change in direction many thousand times per second, and it is by these changes in direction, or reversals, that an electrical pressure of greater or lesser voltage is created.

Completely surrounding the earth and suspended in what we know as "the ether," is the atmosphere, a gaseous envelope composed of certain volumes of hydrogen, oxygen, carbonic acid, argon and other gases and it is this atmosphere that furnishes the conductor or medium through which the radio waves are sent in all directions.

Electromagnetic impulses are set up or created by sending a current of electricity through a wire conductor, thereby generating magnetic whirls, or a magnetic field, around that conductor; the intensity of the magnetic field varying as the intensity of the electric current in the wire varies. As these electrical impulses are thrown out a wave motion is given to the atmosphere that may be likened to the wave motion given to water when an object is thrown into it, the waves radiating in all directions on the surface. The radio waves differ somewhat in that they move not only with a horizontal wave motion but radiate in all directions from the generating source and continue throughout space.

Radio waves have a definite number per second and all travel at the same unvarying speed of many thousands of miles per second. The wave length is the distance from the crest of one wave to the crest of the next wave and this length may be determined when we know how many radio waves are transmitted per second by a broadcasting station, and the miles they travel per second (186,000) by dividing the number of miles traveled per second by the number of waves radiated per second, we get the length of the wave or "wave length."

The alternating current radio frequencies sent out by the transmitting station vary from 50,000 to 2,000,000 per second and these radio frequencies passing through the atmosphere are caught on the antennæ wire of the receiving station and by use of the radio receiving apparatus the high frequency radio impulses are changed to lower audible electrical frequencies, and these in turn are changed to sound waves by the radio telephone receivers.

[1]This article may not be reprinted without permission of the author, who reserves all publication rights.

Receiving Sets for Radio Signals

Radio receiving sets for incoming signals are made in a variety of styles and designs, some with the more elaborate settings costing several hundreds of dollars, while the cheaper sets for general family and amateur use cost about $50. A set retailing at this price will give much satisfaction and pleasure to the "listener in."

In the illustration are shown two or three sets of these instruments that are very effective and give good results in receiving radio signals. In these sets the panels, knobs, base blocks, etc., are made of hard rubber and present a rich and highly finished appearance.

In all radio receiving stations the radio waves are carried from the antennæ wire over the "lead in" wire to the tuning coils. These tuning coils are for the purpose of adjusting the receiving circuit apparatus to a responsive frequency corresponding to the sending station, in other words, tuning to the wave length of the sending station. The variometer type is very effective for this purpose and gives good results.

For changing the high frequency alternating radio currents to direct current impulses that travel in one direction only, a "detector" is used. Two types are in general use, the galena crystal and the vacuum tube. The former gives very good results but for giving a greater amplifying effect the vacuum tube gives best results in that it gives louder and clearer signals.

For the purpose of making a finer and more accurate adjustment, in order to secure a degree of accuracy which will enable very weak signals to be heard, condensers are used. They are of two types, the fixed and variable, the latter giving a very fine adjustment to the tuning coil.

Head Telephone Receiver Sets

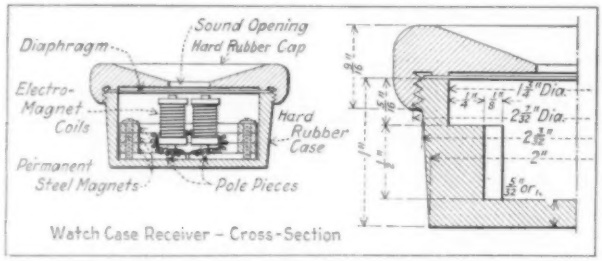
The head receiver sets may be of either one or two receiver units, the one in general use being known as the "watch case" receiver type. These receivers are so designed and constructed that a pair may be attached to a metal head piece, which is usually a flat piece of spring brass fashioned to fit over the head, having one receiver on either end and held against the ears of the listener by the spring tension of the head piece. In the same manner one receiver may be attached to the head piece. Some of the cheaper radio receiving sets are provided with one and the higher priced sets with two receivers.

The telephone receiver is one of the most sensitive electrical instruments ever devised for detecting electrical signals or sounds, not that it has a high efficiency for detecting weak currents, but on the contrary, so authorities state, it has an overall efficiency of only five per cent. However, with all the losses in the receiver its sensitivity is almost incredible when we consider the small amount of electrical energy required to give clear signals or sounds.

The mechanical makeup of the receiver is shown in the illustration and consists of the container unit, that is, the receiver case and receiver cap, made of hard rubber, and the magnetic unit which is arranged within the case. This unit is composed of the permanent steel magnet, the pole pieces, the electromagnet coils, the diaphragm, etc., and constitutes the magnetic medium through which the incoming electrical impulses are transformed into sound waves. In other words, the high frequency radio waves sent out from the radio broadcasting stations mean nothing to the human ear until caught on the antennæ wire of the receiving station and then changed to a lower frequency by the tuning coils, then to audible frequency by the detector and finally by means of the radio telephone receiver the audible signals are changed to sound waves.

The telephone receiver is composed of two distinct elements, one of which is affected by the incoming varying electrical impulses—this is the electromagnet. The other is the diaphragm, a circular disk of high grade annealed iron about .006 to .008-inch in thickness, which acts in connection with the magnet and creates varying impulses or vibrations in the air that are audible to the ear. While no elaborate consideration of the technical details of the action of the magnetic flux in the receiver will be gone into, a brief outline will be given of how it functions in connection with the several component parts which make up the magnetic unit.

The illustration shows a cross-sectional view of the assembled watch-case type of receiver. The permanent steel magnets set up and maintain a constant magnetic force which acts on the diaphragm and tends to draw it toward the pole pieces. The



Assembled Receiver Case and Cap **Enlarged Section**

magnetic flux passes from the permanent steel magnets up and through one pole piece to the diaphragm, then across it to the other pole piece and down through it to the permanent steel magnet again, thus completing the magnetic circuit.

The soft-iron diaphragm is one of the most important parts of the radio telephone receiver. It is held rigidly under tension between the upper surface of the receiver case and the diaphragm ledge on the under side of the cap. Both of these surfaces must be perfectly flat and parallel to each other when assembled, so that when the diaphragm is secured between them, there will be no deflection due to the pressure of the cap. This will give the best possible uniform vibration to the diaphragm when acted upon by the varying magnetic flux that is set up in the pole pieces by the varying strength of the incoming electrical currents, which travel through the electromagnet coils wound around the pole pieces, and give clear and faithful reproductions of the sound waves in the air.

The enlarged sectional view of a portion of the receiver case, cap and diaphragm is shown to emphasize the importance of having the diaphragm held rigidly between perfectly flat parallel surfaces. This suggestion is made in the interest of those who contemplate making radio receiver phones and who desire to make a high grade article. Make the case and cap of hard rubber, as that material will give better results in molding than can be had in bakelite, condensite, redmanol or other plastics.

The telephone head receiver, while giving satisfactory results to the person "listening in," is not sufficient in itself to disseminate the sound waves into a room where they may be heard by a number of persons, and for this purpose an amplifying horn or loud speaker is used.

Making Rubber Radio Parts

The panels of radio sets are made of hard rubber sheet. This is usually furnished in standard sizes with edges finished or ground by the rubber manufacturer. The surface is smooth and polished and requires very little finishing after the various parts are fitted and holes drilled. Sheet rubber, when vulcanized between sheets of planished tin, takes the high polish of the tin and gives a highly finished surface free from air spots or blisters.

Molded panels, base blocks, etc., which may be vulcanized in a short time, are very much in demand and are preferred by some users. By molding these parts, the larger holes may be cored to the finished sizes and smaller holes may be indicated by the mold for drilling, which saves considerable labor in doing this work.

Molded Parts

Variometer frames, coupler bases, condenser bases and tops, tube sockets and bases, induction coil bases, tubes, and blocks, etc., as they are usually of irregular shape, may be vulcanized with good results in molds. Molds with several cavities are the most economical from a production viewpoint.

For casting these molds it is necessary to first make models, which are a facsimile of the parts to be made, and mount them on a molding plate. Molds may also be made by hand or with a die sinking machine. However, as each cavity must be separately shaped and finished, it is an expensive method and casting is recommended.

A great variety of knobs are used in radio work. Some have small tapped brass inserts or screws vulcanized in them, some have smooth holes and others have female threads molded in them.

Various types of molds may be used. Two piece molds having several cavities each, which may be cast from models, give very good results for knobs of medium size and some of the smaller sizes. The rubber compound is cut to proper size and weight, from unvulcanized rod or sheet stock and placed in the molds and vulcanized in hydraulic presses.

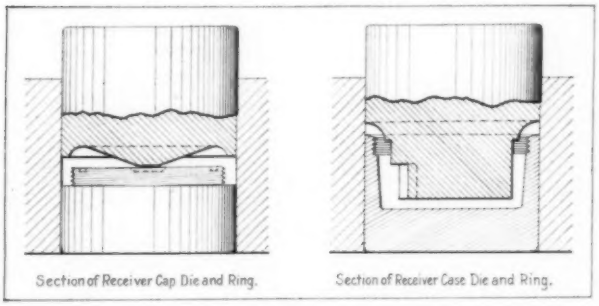
The smaller sizes may be turned from vulcanized hard rubber rod in an automatic screw lathe, the edge knurled and hole tapped or drilled.

Knobs of the larger sizes that are conspicuously mounted on the panel, should be well molded and have a very fine finish. The telephone receiver case and cap also require accuracy in molding and a high finish, and these several parts may be made of hard rubber dust and vulcanized in dies which will give the results desired.

Making the Receiver Case and Cap Dies

For both the receiver case and cap, also the larger sizes of knobs, a steel ring and seven dies are required; these constitute a complete vulcanizing die unit. When the production is large several sets are required.

The dies are made from hard drawn brass. In the illustration is shown a sectional view of the cap dies and a portion of the



Dies for Forming Receiver Cap and Case

steel ring. The top die is carefully shaped to the profile template and polished. The lower die is turned, thread chased (24 per inch United States Standard) and the diaphragm groove turned in the upper face, especial care being taken to make the groove so it will produce a perfectly flat surface in the cap as no machine work can be done on the diaphragm ledge after molding. This, while it appears simple, is one of the difficult operations in making this die, and only the most expert die makers who have been trained to do it, succeed in giving results that pass inspection.

A depression should be made in the center of the lower die to produce a button for cushioning the small diameter in the center of the upper die. This is to prevent that member from losing its shape by the repeated pressing operations. The button is removed when the hole is drilled in the cap.

A sectional view is also shown of the upper and lower receiver case dies and a portion of the steel ring. Dies are carefully shaped to templates, threaded and polished. Where surfaces are parallel a slight draft or taper should be given to the dies so the work may be easily removed.

The die ring is made from forged machinery steel. The outside diameter is turned, both sides faced parallel, and the seven holes bored to size, after which they are lapped smooth with emery powder and oil, the holes stamped with the number, and the dies fitted. The ring should be heat treated to prevent corrosion.

For duplicating dies, standard gages and profile templates should be accurately made from the first die, after its product has been approved, and these are then used for duplicating the dies. A master set should be kept for checking up the shop set, and the utmost care should be taken to preserve their accuracy.

Making the Case and Cap

Rubber dust is used for making both case and cap, and after samples have been approved, suitable weights or measures are made for accurately determining the amount of dust required for each die. After charging the dies with rubber dust, they are placed between hot iron plates and vulcanized in hydraulic presses, and then chilled by water flowing through the cooling plates of the chilling press. The dust method process of vulcanizing was described in THE INDIA RUBBER WORLD, March 1, 1922. In that issue, the various tools and process are described in full.

A careful inspection is made for vulcanizing defects, after which the various members are machined to size and shape, polished and packed for shipment.

Hard rubber possesses many features that make it most valuable for use in radio work, it being one of the best dielectric or non-conducting materials known, and it is recommended for such parts as panels, knobs, receiver caps, cases, tubes, base blocks, etc. Well vulcanized hard rubber sheet will not warp nor will molded parts lose their shape when subjected to a reasonable degree of heat.

S. A. E. SUMMER MEETING

Arrangements are being completed for the summer meeting of the Society of Automotive Engineers, Inc., which will be held at White Sulphur Springs, West Virginia, June 20-24. Reduced rates have been secured from practically all the railroads, and special trains will carry the eastern and western contingents. The present indications are that there will be a large number in attendance, while the program will be a most interesting one. Five sessions have been decided upon, and will be as follows: (1) Research Session; (2) Fuel and Engine Session; (3) Passenger Car Session; (4) Aeronautic Session; and (5) Motorbus Session.

AMERICAN SOCIETY FOR TESTING MATERIALS ANNUAL MEETING

The American Society for Testing Materials will hold its 25th annual meeting at Atlantic City, New Jersey, June 26 to 30, 1922.

According to the provisional program, the following reports and papers of interest to rubber chemists and technologists will be presented at the morning session, Friday, June 30: Report of Committee D-9 on Electrical Insulating Materials; Report of Committee D-13 on Textile Materials; Methods for Conducting Physical Tests on Rubber Products, by A. H. Nuckolls; Accelerated Aging Tests on Rubber Goods, by W. W. Evans; Report of Committee D-11 on Rubber Products.

Splinters in Plantation Rubber

Few rubber planters or their agents appreciate the damage that foreign matter may cause in finished rubber goods. To be sure plantation rubber is much freer from dirt than wild rubber, but half a dozen splinters of wood are more troublesome and may cause more damage than would a peck of mud. This is because splinters will not dissolve in washing and mud will. Nor is this all. Splinters cover themselves with a fine coating of rubber, pass through the mixing mills, flatten out under the calender rolls and go through making up and vulcanization without detection. When the goods made from such rubber is in use, however, surface faults, leaks, and spots are the results that often cause a loss of thousands of dollars. At the instance of the General Electric Co., who are large users and have suffered loss through splintery plantation rubber, THE INDIA RUBBER WORLD has secured the views of other large rubber users. The following are excerpts from a few of the many replies received.

Tea and Coffee Come Clean, Why Not Rubber?

"VERY little of the plantation rubber received in this country is free from dirt, splinters and other foreign substances, which necessitates washing in a great many cases where it is used in the manufacture of tubes and tires, and it is quite impossible to wash out all of these foreign substances, regardless of how carefully this work is done.

"A little more care and the proper method of packing this rubber would eliminate this trouble, and would likewise save rubber goods manufacturers millions of dollars every year.

"No doubt you have observed the packing cases that are used for tea and coffee and many other articles that are produced in the same countries where rubber is grown. In these cases the proper methods of packing and materials are used to insure the preservation of these goods in transit, and what is possible in the case of tea and coffee, I think, could also be effected in the shipment of plantation rubber if the proper study of this subject was made."

AJAX RUBBER COMPANY, INC.,
W. G. McMahan,
Vice-President and Factory Manager.

Thin Boxes the Cause

"We have had certain amount of trouble recently, but it seems this is the case only when the rubber is packed in boxes which are made of a very thin wood. The wood adheres very tightly to the rubber and a part of this sticks when the rubber is freed from the box."

THE MASON TIRE & RUBBER COMPANY,
J. J. Flynn,
Purchasing Agent.

Often Find Splinters

"We do have some difficulty with splinters which come from the sides of the cases. We have, however, never discovered any sawdust in the rubber. The splinters, of course, are detrimental, especially where the manufacture of fine rubber goods is involved. The absolute elimination of splinters would in many cases eliminate the necessity of washing rubber and be beneficial in many other ways."

THERMOID RUBBER COMPANY,
E. W. Craft,
Purchasing Agent.

Cheap Cases the Cause

"We have had a number of shipments which contain splinters and this, we believe, was caused by using what is known as a redwood or serayah lumber. We have further had information that this is the cheapest case that can be secured and we have complained to a number of importers that we did not desire to have any of our rubber shipped in these cases as the splinters embedded in the rubber. Even after washing the rubber it is possible that some of the splinters not being removed would cause trouble in our goods.

"Where rubber has been shipped to us in cases, mentioned by some as whitewood, but we believe they are known as Momi, we find that this rubber usually arrives in good condition and the wood does not splinter so as to be embedded in the rubber. Some rubber is shipped in what is known as tea cases or Venesta, which is a veneered case. The rubber arrives in very good condition in these, but we believe the cost prohibits most shipments being made in these cases."

PENNSYLVANIA RUBBER COMPANY,
H. H. Salmon,
Purchasing Agent.

Frail Cases at Fault

"We do experience some little trouble at times with our plantation rubber, due to the fact that there are small pieces of wood and splinters found in the cases. As long as this type of rubber is shipped in the frail packages that are now in use, we do not see how this can be overcome."

THE FISK RUBBER COMPANY,
F. C. Foley,
Rubber & Fabric Department.

Complaint Justified

"Regarding complaint of the General Electric Company that rubber shipped in rough wooden boxes is objectionable on account of sawdust and splinters, we think this complaint is fully justified and is indorsed by all who receive rubber packed in this manner."

THE FIRESTONE TIRE & RUBBER CO.,
W. M. Noble,
Purchasing Department.

Troubled for Years

"We are certainly pleased to note that some one is showing an interest in this matter.

"For years, we have been taking the question up with the various importers and calling their attention to the ridiculous situation in connection with their business where the shipper of the stock used every precaution apparently to keep the stock clean and nice and then sifted sawdust and splinters in between the sheets, these sheets being pretty well massed together during shipment, so that it was almost impossible to properly clean the stock.

"We have stated to them that we would gladly pay an additional price for properly packed rubber but they have always seemed to be indifferent or they felt that the field was too broad for them to tackle and the matter has been allowed to drift.

"We feel that there is an amount of loss due to this cause which it is hard to determine but which, if figured up, would be staggering and that it is a distinct economic loss to have the

rubber shipped in its present form. If you can do anything to awaken these far eastern people to the situation, you will deserve the applause of all users of rubber goods."

VOORHEES RUBBER MFG. CO.,
John J. Voorhees, Jr.,
President.

Foreign Matter Often Present

"It frequently occurs that more or less dirt and foreign matter adheres to the outside of packages of crude rubber, the absence of which would save considerable time, and in some cases add materially to the character of the product through the added cleanliness thereof.

"We, however, have not been careful enough to note with any considerable precision as to what extent we are handicapped in this respect, and shall be glad to follow the matter up, after which the information gained will be at your disposal."

ESSEX RUBBER COMPANY,
C. H. Oakley,
President.

Sand and Pebbles

"We experienced the same trouble with plantation rubber, in that it contains some particles of wood and other foreign substances. This does not happen in all of our shipments.

"We always try to purchase either selected estates or prime ribbed smoked sheets.

"The writer personally believes that our principal trouble with foreign particles comes from sand or pebbles."

DAVIDSON RUBBER COMPANY,
W. Brown, Jr.,
Vice-President.

Splinters and Sand

"We have experienced a like trouble as regards splinters in the rubber, but have not as yet noticed any sawdust. We have, however, at times found particles of sand."

HABIRSHAW ELECTRIC CABLE COMPANY, INC.,
C. F. Devine,
Chief Chemist.

Practical Suggestions Wanted

"Our observation has been that much of the trouble is due to opening and repacking at various points between the plantations and the manufacturers, for instance on the London docks.

"If you learn of any constructive developments in this field we should be pleased to have you give us such information. The Crude Rubber Committee of The Rubber Association of America would, of course, also be interested in anything that comes out of your investigation."

THE B. F. GOODRICH COMPANY,
A. D. Moss,
Director of Purchases.

Use Wrap Sheets

"Our trouble along this line is very slight, not enough to cause us any inconvenience. We have found an effective method to combat this difficulty is to have the rubber covered by two or more wrap sheets, thus any splinters or sawdust from the box will tend to go into the wrap sheets and will not become imbedded in the balance of the rubber in the case.

"Rubber which does contain splinters or sawdust can be cleaned quite successfully by a vigorous brushing with a wire brush."

THE GOODYEAR TIRE & RUBBER CO.,
R. B. Bogardus,
Crude Rubber Division.

Full of Splinters

"We have found the cases very rough and full of splinters and for this reason we have found it necessary to pass the rubber through an extra process before it can be used."

DAVOL RUBBER COMPANY,
Office of the General Manager.

Frozen Rubber the Worst

"We have experienced considerable trouble along the same line mentioned. After removing the cases we usually go over all packages of rubber with a wire brush in order to eliminate any nails, splinters or sawdust that may have become embedded in the rubber. It appears that we have more trouble of this nature when the rubber is frozen."

THE GENERAL TIRE & RUBBER COMPANY,
G. Stoller,
Purchasing Agent.

Unplaned Boxes Splinter

"We have had several shipments of rubber which came in unplaned boxes which caused some trouble in handling. We had to put this material through the washer in order to get clean rubber. As a general rule, we have very little trouble with boxes of this kind."

THE INDIA TIRE & RUBBER COMPANY,
Sterling W. Alderfer,
Purchasing Agent.

Wash All Rubber

"Since we wash all rubber before using, have paid but little or no attention to the complaint that plantation rubber shipped in rough boxes contains splinters and sawdust."

THE FAULTLESS RUBBER COMPANY,
I. L. Miller
Secretary.

Occasional Trouble

"In regard to receiving plantation rubber in rough boxes, will say that we have not experienced any great trouble in the rubber containing sawdust and splinters, although at times we find that a few cases in a shipment give us trouble along that line."

THE RUBBER PRODUCTS COMPANY,
I. L. Miller,
Purchasing Dept.

Little Trouble at Present

"Regarding complaints on rubber shipped in boxes, some time ago we had a certain amount of this sort of trouble.

"The better plantations have practically overcome any condition of this kind, and the last year and a half we have had very little complaint along this line."

HEWITT RUBBER COMPANY
J. M. Cranz,
Assistant General Manager.

All in the Packing

"It is quite true that if rubber is shipped in ordinary rubber packing cases which are not very strong, they are liable to break in transit, and the contents would in all probability pick up wood splinters and other foreign particles.

"In the past, we have specified in our contracts that such crêpes as we do not wash and dry, that is those we use from the case direct, be shipped in 'Venesta' cases. Venesta cases being specially prepared cases made to stand rough handling, we found they arrived at our factory in very good condition, and the contents would be more or less free from sawdust and wood

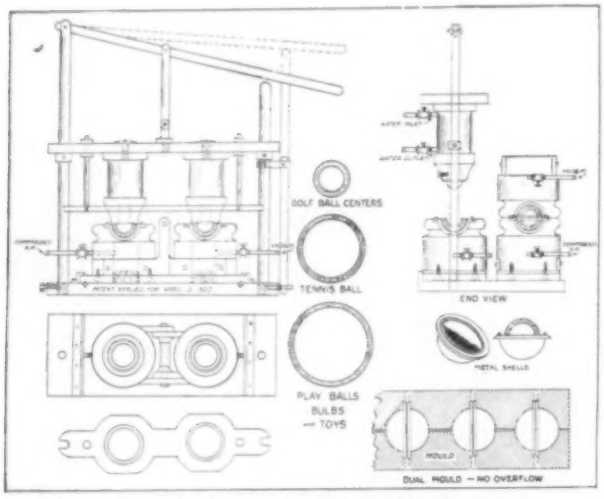
splinters. This arrangement we made directly with the exporters in Singapore. If the General Electric Co. buys direct from Singapore, it could easily make the same arrangements.

"Another method of packing would be in burlap. We understand there is a special machine now in use in Singapore for packing rubber in burlap, and in fact, we are arranging to have some of our shipments come through packed in this way. We feel that the rubber should be in a still better condition packed by this method, although it may arrive more or less massed."

HOOD RUBBER COMPANY,
Per W. A. Littlefield.

Squires Process for Making Golf Ball Centers

The modern golf ball is constructed with a resilient spherical center, surrounded with a pure rubber tape or thread that is applied by winding under tension, and the wound ball is finally encased in a tough shell of gutta percha, compressed and molded. Perfect sphericity in a golf ball center is necessary for balance of the finished ball, but frequently balls are built up on centers more or less out of shape.



Press and Mold Parts for Making Golf Ball Centers

The device here illustrated and described affords a means of forming two accurate hollow hemispheres of rubber which can be vulcanized in pairs in true spheres, concentric as to cavity and exterior.

The essential parts of the device include a hand-operated press, comprising two capped cylinders attached to a vertically moving crosshead, each provided at the lower end with a hemispherical protuberance for shaping the hollow of the ball center.

On the base of the press is a forming mold comprising two halves hinged together. The mold halves, like the cylinders over them, are hollow and arranged for heating and cooling by steam and water circulation.

Under the end view of the forming press may be seen a pair of metal shells in which the halves of the ball center are formed and cured. These shells are pressed up from mild steel to fit the hinged forming mold cavities and are provided with flanges for registration in the curing mold and to provide a means of separation after cure.

Forming a Ball Center

To form a ball center a pair of flanged steel cups is arranged in the forming mold, sufficient rubber composition is placed in each and the plungers brought down upon it. The cups thus formed are then brought together to form a steel encased hollow ball by simply closing them together in the hinged mold and again applying pressure.

The rubber is shaped into hollow hemispheres with the edge at the inner diameter slightly raised above that of the outer. This form affords a slight excess of stock for compression of the joint in final curing.

A succession of steel curing shells is thus passed through the forming press and set together in pairs, with or without the inclusion of some special form of filling for the cavity, such as gutta percha, sponge rubber, metal ball, frozen liquid, etc. The centers are then ready for placement in the heavy outer retaining mold for curing.

Curing

A section of a multiple cavity curing mold is shown in the lower right corner of the illustration.

Each cavity of the curing mold is grooved to receive the flanges of the steel cups encasing the ball center. This serves to hold the parts together in perfect registration and prevents overflow which would distort the ball.

For quantity production groups of this mold assembly are fastened together in clamps on an ordinary vulcanizer car and cured in one heat.

The cured ball is easily removed from the flanged steel encasing cups by simple insertion of a knife blade and a slight prying effort.

AMERICAN ENGINEERING STANDARDS COMMITTEE

Sectional Committee on Insulated Wire and Cable

A sectional committee to standardize insulated wire and cable for other than telephone and telegraph use has been organized under the Rules of Procedure of the American Engineering Standards Committee. Ten national organizations are sponsors for this committee, which now consists of twenty-four members, representing the sponsors and six other cooperating bodies. The representatives of the American Society for Testing Materials on the committee are W. H. Bassett and F. M. Farmer.

The officers and members of the executive committee are W. A. Del Mar, Habirshaw Electric Cable Co., Yonkers, N. Y., chairman; E. B. Meyer, Public Service Electric Co., Newark, N. J., vice-chairman; F. J. White, Okonite Co., 501 Fifth avenue, New York, N. Y., secretary; F. M. Farmer, Dean Harvey, E. B. Katte and Dana Pierce.

At the organization meeting the following technical committees were appointed: on definitions, copper conductors, stranding, rubber insulation, impregnated paper insulation, varnished cloth insulation, magnet wire, fibrous coverings, metallic coverings, weatherproof wire, standard make-ups and export. The chairmen of the committees on copper conductors and rubber insulation are, respectively, J. A. Capp, chairman of the A. S. T. M. Committee B-1 on Copper Wire, and F. M. Farmer, chairman of Committee D-11 on Rubber Products.

American Society for Testing Materials

At a meeting of Committee D-11 on Rubber Products the work of various subdivisions was reviewed, and the action of the Joint Rubber Insulation Committee approved. It has been found necessary to appoint a new subdivision on chemical analysis of rubber products, of which C. R. Boggs is chairman.

The subcommittee on cold water hose will be asked to compare A. S. T. M. tentative specifications for fire hose with those issued by the Bureau of Standards, as contained in Circular No. 114.

A subcommittee on pump valves is drafting a specification covering five classes of pump valves for use in pumping fluids not injurious to rubber.

A Glossary of Words and Terms Used in the Rubber Industry—XV[1]

Pneumatic Tires—Additional Definitions[2]

By Henry C. Pearson

L. C. L. (1) (Less than carload lot.) An American standard export commercial term much used in the shipping of tires, tubes, and other rubber goods, and meaning that for the price quoted by the seller, goods will be transported to the seaboard at the freight tariffs for less than carload lots. (2) A railroad freight rating term in the United States applying, as in the case of pneumatic tires in paper-wrapped bundles, to the extra charge for transporting less than carload (16,000-pound) lots, a late 1921 comparison being: minimum C. L. (carload) rate from Akron to Los Angeles, $4.33½ per 100 pounds; L. C. L. rate, $5.75½.

LENO WEAVE. From French *linon* (lawn, linen). A stout variety of open, network, long-staple cotton fabric used for breaker strips in which the weft or filler threads are double and in which they cross each other between the warp threads and so loop about the latter that one strand of weft lies above while the other lies below the warp. The warp is thus practically knotted, tendency to distortion is lessened, and, it is believed, the rubber riveted in the interstices by friction is held more securely than in plain, square-woven breaker fabric. See Breaker Strip.

LEVER. A tool for prying and stretching the beads on a clincher tire so that the tire may be sprung over the flanges of a clincher rim. See Tire Tool.

LOOM-CONFORMED FABRIC. A tire-building fabric in endless or continuous bands so woven as to present in cross-section a contour varying from a short arc to a three-quarter circle, and designed to conform more or less completely to the convex, annular surface of a tire-building core; also intended to replace flat strips of square-woven, bias-cut builder fabric cemented end to end. Types of loom-conformed weaves include:

1. The Doughty Tire Fabric. A plain-woven fabric band wrapped several times about a building core to form a casing by the continuous process. The band is woven to the width and shape of the tire, and curved to conform to the rounded surface of an expansible, electrically-heated core, which latter is encased in a 3-part mold and the tire cured in a steam-heated hydraulic tire press. The fabric band is frictioned with a specially-designed calender, and while hot is wound by machinery four times about the core, after which cushion, breaker, and tread are applied.

2. Fisher Core-Woven Fabric. Fabric woven or braided in tubular fashion about a series of collapsible tire-building cores set one above another, the top core being removed after a certain amount of fabric has been formed and set below, or the bottom one set above, to permit the continuous operation of the loom or braider. The fabric may be frictioned or impregnated with rubber by a special calender during the braiding. The annular convex fabric sections thus formed are cut off circumferentially and used as carcass-building bands.

3. Langer Fabric Bands. Endless bands of fabric shaped in a loom to fit about a tire-building core and applied in plies like strips of regular tire-building fabric. The core being collapsible also serves to stretch the superposed bands forming the carcass. The fabric is woven in continuous, tubular form so that it may be cut off to form casing-shaped layers. These sections when separated are impregnated or frictioned. The claim is made that two such plies can replace several of the pieced fabric layers ordinarily used on the smaller-sized tires.

MACHINE WRAPPED. Spirally wound on a cross-wrapping machine with a continuous strip of cotton taping. Referring also to a built-up casing thus prepared for pressure in vulcanizing in a tire heater. See Heater Cure.

MANUFACTURERS' STANDARD WARRANTY. A revised form of assurance given buyers of tires, recommended by The Rubber Association of America and superseding the definite mileage guarantee. It took effect January 1, 1922, being indorsed by ninety-four leading tire manufacturers representing over 90 per cent of the total production of tires in the United States. Reasons given for the change were that the mileage guarantee, when not abused, was too often misunderstood, being really only a basis for adjustment rather than an actual pledge that the tire would deliver a stipulated number of miles. While not guaranteeing mileage, or covenanting that adjustments shall be made on such a basis, the new warranty, however, insures tire buyers against reasonable loss of service due to defective material or faulty workmanship for which a manufacturer might be blameworthy, and which may be determined by the "general condition and appearance of the tire." The principle on which the standard warranty is based is that tires have passed the experimental stage, are as staple and reliable as any other widely sold commodities, and no longer need factitious aids in marketing. Also referred to as the merit guaranty. Compare Guarantee.

MASHED BEADS. Casing beads dislocated and jammed between core and mold shell in vulcanizing, and as a result of faulty setting in carcass building. See Bead.

MASTER MOLD. A strip of metal or rubber and canvas, having a depressed design which, in vulcanizing, will impart a raised design to a tread; a sunken design in plaster of Paris made in a retread vulcanizer. See Matrix.

MESH. The threads inclosing a space in a fabric network; one of the interstices into which rubber is frictioned by the calendar. See Friction.

MICA. See under Accessories.

MOCK LENO. A cheaper, lighter grade—largely peeler cotton—of breaker strip, much used as a repair fabric, in which a more open, looser, basket weave is substituted for the closer "interlocked" weave of the true leno. Warp and weft threads are grouped in series of three and cross at right angles, but the threads remain parallel and are separately interlaced in crossing, leaving the square spaces for friction about twice as large as those in true leno weave. See Leno Weave, Breaker Strip.

MOLD CURE. The curing of a built-up casing on a rigid metal core in a steam-heated vulcanizing tire press in which powerful stress is applied, usually by hydraulic (hydrostatic) power, to the pair of hollow metal molds inclosing the casing on the core so as not only to aid in curing by supplying pressure, but also to impart to the tread surface non-skid or other designs engraved or cast in intaglio on the inner surfaces of the molds. See Dry Cure, Molding Process, Pressure, Vulcanizing.

MUSLIN. A term for a wide variety of square-woven cotton cloths used in making and repairing tires.

N. T. D. A. (National Tire Dealers' Association). Every legitimate tire dealer in the United States is eligible for membership in this association. Its stated object is: "To advance and safeguard the business interests of tire dealers, and to promote a cooperative relationship between the manufacturer, the tire dealer, and the buying public."

[1] Continued from THE INDIA RUBBER WORLD, May 1, 1922, pages 540-541.

[2] Copyrighted by Henry C. Pearson, may be reprinted with credit to the author.

NAPHTHA. A volatile, inflammable fluid distilled from coal tar, also called solvent naphtha (chemical formula: benzol, toluol, xylol, styrol, and pseudo-cumol); much used as a rubber thinner and solvent. The 90 per cent grade (also called 160-degree C. coal-tar naphtha) boils below 320 degrees F. and has a specific gravity of .86. Naphtha, or light naphtha, is a term applied to the petroleum derivative, gasoline, or to a fluid intermediate between the lighter gasoline and the heavier benzine having a specific gravity between .69 and .70 and which boils at from 176 to 230 degrees F.

NECK. The circumferential depression on the outer side of a casing, just above the bead, especially marked on clincher tires, and where the plies of fabric that are brought under the bead core and lapped above the heel of the bead meet the sidewall; sometimes called bead channel. See Bead, Bead Heel, Sidewall.

NON-ELASTIC BEAD TIRE. A tire having a "stretchless" bead core of hard rubber, one or more straight wires, braided wire, or wire cable, and used on other than plain clincher rims.

COLORING CURED RUBBER DIPPED GOODS

Transparent aniline colors and of range sufficient to meet all requirements are now employed to dye rubber dipped goods after curing. They are said to be harmless, preserve the full strength of the rubber, and allow economy in manufacture because goods can be made from uncolored gum and subsequently be dyed as required.

The colors are correctly dissolved with addition of acetic acid and the balloons dipped in the dye solution heated to approximately 180 degrees F., except in the case of yellow, which is not heated over 140 degrees. After one hour at this temperature the balloons are lifted from the vat, rinsed thoroughly and dried. Thorough rinsing requires the use of a large vessel which can be readily flushed with a steady stream of water. The balloons held in a cage are periodically compressed with a squeezing arrangement of wooden slats to expel all the water. As the pressure is removed the balloons fill with fresh water and after several rinsings all excess dye is removed.

Rubber Paper and Its Production

A Review of Experiments Conducted in British Paper Mills—Comparative Tests and Costs

By Frederick Kaye, A. R. C. Sc.

WHEN rubber latex, suitably diluted, is added to the beaten pulp in the beater of the paper-making machine, and, after thorough mixing with the pulp, is afterwards, if necessary, thrown out on the fiber by a suitable coagulative agent, the rubber becomes as closely associated with the fibers as would be the case with a dye or an extremely attenuated rosin size, etc., but the material condition and physical qualities of the fibers are improved and strengthened. Experiments show that the hydration of the fibers is modified and stimulated by the action of the rubber latex. In fact, there is room for much valuable and interesting research as to the technical effect of rubber latex during the beater process.

The rubber, which is precipitated or incorporated with the fiber, has no deleterious effect upon the color of the finished and dried paper. Experiments with cotton, linen, bleached sulphite, bleached esparto, bleached straw, and bleached bamboo have shown that the whiteness of the paper is not affected.

The use of rubber latex appears to improve the texture, and makes the paper more uniform when viewed by transmitted light. The feel of the paper, especially with paper containing larger amounts of rubber, is much improved, and becomes more pleasant to the touch, and such paper should have a good market for the manufacture of thick paper and boards for the binding of books, etc.

The strength of paper depends upon the nature of the fibers and the time and character of the beating to which they are subjected. The prolonged beating which is necessary in many cases to get the strength required is an expensive item in the cost of paper-making. By the use of rubber latex, often in small quantities, the paper is strengthened very considerably, and therefore it is easy to realize that a shortening of the time of beating will be possible in many cases. It has been found that a pulp beaten 2 to 2½ hours may give a paper as strong or stronger than that from the same fiber beaten 3½ to 5 hours. When this is worked out in a satisfactory manner on a big commercial scale it will be seen that the use of rubber latex ought to lessen the cost of production very considerably.

While the tensile strength and bursting strength is increased another important effect is the increase of the folding resistance of the paper. Many otherwise excellent papers are often spoiled by the fact that, on folding, the paper cracks along the line of fold. Somewhat expensive methods have been adopted to try to overcome this objectionable property. With rubber latex a paper can be readily made to have a high folding number and to possess the property of folding without serious permanent cracking along the line of fold.

With and Without Rubber

The following table gives comparisons of papers produced from fibers without and with rubber latex:

	Untreated		Treated	
Material	Folding Resistance	Bursting Strength 0.1 mm. Pounds	Folding Resistance	Bursting Strength 0.1 mm. Pounds
Cotton-waste	220	31	1,300	40
	194	....	2,800	....
Cotton-linters fiber	99	30	6,625	53
	80	....	....	....
	100	37	3,500	52
Printing paper	2	7	250	20
	....	....	80	....
Writing paper	20	22	1,060	34
	27	....	....	....
Sisal hemp	700	32	8,000	40
	1,200	....	4,000	51
	927	41	3,100	52
	760	41	3,000	....
Manila hemp (old rope)	726	41	24,000	60
	....	....	20,000	....
Jute (waste)	330	36	2,125	54
	375	....	2,300	....
Waste flax	38	25	800	40
	100	....	1,113	....
Red cover paper 60% broke	8	9	80	18
	6	....	....	....
Ditto	25	13	1,975	30
Brown cover paper 50% broke	25	15	2,500	40
	60	....	5,160	37
Bleached sulphite	....	....	260	40
+ 10% waste flax	....	....	7,500	43
Bleached sulphite (beaten 2 hours)	10	9	....	....
	30	22	....	....
	65	11	....	....
	12	10	....	....
	7	11	....	....
Ditto	....	....	600	30
	....	....	3,350	25
	....	....	400	35
	....	....	2,138	30
	....	....	224	30
	....	....	826	30
Shelving paper, etc., broke 80.90%	5	10	1,100	30
	....	7	100	27
	....	....	80	27

The bursting strength is pounds per square inch calculated to a thickness of 1/10 millimeter.

Waterproof Qualities

Paper containing rubber latex is more water-repelling than the same paper without rubber, and a suitable treatment of the fibers in paper-making with rubber latex will give a waterproof paper.

The electrical resistance and dielectric properties of paper may be improved by the addition of rubber latex.

Paper pulp, after the addition of rubber latex, readily absorbs dyes, and in some cases the dyed paper is slightly darkened in color. It appears likely that smaller amounts of dye will give the standard shade desired.

It is apparent that the loading matter, such as china clay, will be better retained in a latex paper with lessened loss in the backwater. Experiments are being conducted in this regard.

Practical commercial experiments in paper mills have shown that the labor costs, etc., of the addition of rubber latex are negligible. All the work required is the dilution of the latex and its filtration, if necessary, through fine sieves before addition to the beaten pulp, and also the control of the amount and nature of the coagulative agent. The passing of the diluted latex through a centrifugal machine will prevent the need for any filtration. The paper may be machine-sized or tub-sized pulp in the usual manner. The latex-treated pulp is transferred to the cistern and then passed through the paper-making machine without any deleterious effects upon the wire or felts.

Till the latex is more or less standardized on the plantations the amount of rubber in the latex in each delivery can be easily determined by pouring, say, 10cc. or 50cc. of the latex into methylated spirit or acetone, and then drying and weighing the solid coagulum. Hence, the volume of latex for, say, one ton of paper can easily be calculated. The quantity will depend upon the nature of the fiber and the quality and character of the paper to be made. With high-grade fibers a small amount will often be sufficient to produce the paper required.

Quantity and Cost

Many papers have been made to give a rubber content on the dried paper of 0.1 per cent ranging up to 1 per cent, with highly satisfactory results, while in other cases experiments have been made to give a rubber content up to 5 per cent and more. Papermakers will soon be able to determine for themselves the amount of rubber latex necessary for their own furnishes to give the quality aimed at.

The cost of the latex will be controlled by the current price of rubber, the freightage, and the cost of the containing vessels. For some time to come the cost should be from 1*s.* to 1*s.* 6*d.* per pound of actual rubber content. Therefore, the cost of the latex for a paper to contain 0.5 per cent of rubber would be 12*s.* to 18*s.* per ton of paper made. Better organization of the supply and cheaper packing in bulk should help to bring down the cost. But over and against the cost of the latex will be the lessened cost of production if the time of beating is decreased, together with the increased value of many grades of the paper made. In many kinds of paper, containing larger quantities of rubber, cheaper and inferior fibers may be advantageously used, while the increased value of such paper and boards for specific purposes will much more than carry the cost of the latex.

Experiments show that latex paper and boards containing large proportions of waste paper will be valuable for many purposes. There is a good field for further experiments in this direction.

Experiments on a commercial scale have already been conducted successfully in paper mills, and arrangements have been made for further commercial tests as to the production of latex paper in different paper mills in Lancashire, Yorkshire, the Midlands, London, and the South. When these have been proved satisfactory arrangements will then be made to import larger supplies of latex for use in the paper industry.

Asbestos Mittens in the Rubber Mill

In the vulcanizing room of rubber mills protection for the hands in handling hot molds, heavy bars, wrenches and vulcanizer doors is usually sought by the operators. In the place of cloth pads for the hands it is much more satisfactory to use mitts or gloves of asbestos when handling hot molds. Various forms of asbestos hand protectors are shown in the illustrations. These means are all very durable and effective for the purpose and their use will save many painful injuries.

Another field of large possibilities for the use of asbestos gloves and mittens is the host of tire-repair vulcanizing shops where mechanical facilities for handling heavy molds and hot apparatus are, as a rule, absent.

Fig. 1. Ordinary Asbestos Glove

Most of the problems concerning the protection of workers are special where protection by asbestos is concerned. To meet these, many forms of asbestos industrial garments have been devised, although comparatively few of these apply to the needs of rubber workers.

The electrical, iron, steel, and metallurgical industries generally, afford the principal fields for the use of asbestos clothing. Still, the rubber worker engaged as pressman, vulcanizing man or otherwise working with hot appliances, acids or corrosive chemicals will find some form of asbestos gloves, mittens or even leggings of great value as protection against serious burns or other injuries.

Gloves and Mittens

Fig. 1 shows an asbestos glove of ordinary form without gauntlet. It provides for free finger action, is fireproof, and is lined with fleece or ticking. A workman clothed with two styles of asbestos mittens is shown in Fig. 2. One of these hand protectors is a full mitten while the other is a one-finger mitten found convenient in some work by allowing the use of the thumb and index finger. These mittens are sometimes reinforced with an extra ply of asbestos fabric over the palm or are made of extra length for protection to the forearm.

Fig. 2. Asbestos Apron, Mitts and Leggings

Insertion of the thumb on the edge of the palm rather than on the face of it makes a mitt reversible in case it is desired to wear it with the asbestos face inside. Fig. 2 illustrates also other asbestos garments such as apron and leggings, the entire combination forming effective protection against injury from excessive heat or corrosive liquids.

Incidentally mention should be made of asbestos safety blankets made in generous proportions for use in smothering fires when water or chemical solutions are not at hand or are of no value. A blanket of this sort might well serve for personal protection in an emergency.

The Editor's Book Table

"FACTS AFFECTING THE IMPORTATION OF RUBBER PRODUCTS into Italy, Norway and Denmark." Three separate monographs prepared by the Rubber Division, Department of Commerce, P. L. Palmerton, chief. Published by Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 8 by 9 inches.

Detailed reports concerning the rubber trade of these countries differ widely, particularly in regard to the part played by the United States. Italy, for example, in recent years, although levying no preferential customs tariff on rubber manufactures imported into the country, has been taking less of our rubber manufactures, with the exception of automobile tires, than in 1913.

Norway and Denmark, on the other hand, are importing largely from the United States, the rubber manufacturing in these countries being comparatively unimportant.

"THE CHEMISTRY OF THE NON-BENZENOID HYDROCARBONS and Their Simple Derivatives." By Benjamin T. Brooks, Ph. D. First Edition, 1922. The Chemical Catalog Co., Inc., New York. Cloth, 612 pages, 6 x 9 inches.

This volume is primarily for the research chemist who will find it replete with information on the chemistry of the paraffine hydrocarbons found in or derived from petroleum. Rubber chemists particularly will be interested in the references to polymerization of hydrocarbons, rubber in connection with vulcanization, accelerators of vulcanization, and the synthesis of rubber and rubber-like substances.

"ADVERTISING THE TECHNICAL PRODUCT." BY CLIFFORD Alexander Sloan, vice-president, Campbell-Ewald Co., and James David Mooney, vice-president's staff, General Motors Corporation, and special lecturer, New York University. McGraw-Hill Book Company, Inc., New York, N. Y. Cloth, 357 pages, 6 by 9 inches.

The authors of this excellent work show their thorough grasp of their subject, claiming that only the most important factors of their problem can be considered in a single volume.

The book is divided into five parts. Chapters that are particularly suggestive are headed "The Market for the Product," "The Advertising Appropriation," "Technical Advertising Display," "Technical Advertising Copy," "Direct Mail Advertising," and "Prospectuses, Bulletins, and Catalogs." Part V, the appendix, contains some items that are well worth studying, particularly the section "Criticisms of Advertisements." It may be noted in passing that the advertising displays of two well known rubber companies here receive favorable comment. The volume is well illustrated and contains a good bibliography.

"WOMEN IN RHODE ISLAND INDUSTRIES," A BULLETIN PUBLISHED by the Government Printing Office, Washington, D. C., supplies interesting data regarding the wages, hours, and working conditions of women employed in the industrial and mercantile establishments of that state. The greatest number of women employed was in the rubber industry, and in the six rubber establishments visited women represented 42.5 per cent of the total working forces. Wages, averaging $20.70 per week, were found to be higher than in the other industries, while the weekly schedule, of approximately 48 hours, was found to be the shortest.

"THE GROWING MENACE OF BENZENE (BENZOL) POISONING IN American Industry" is the title of a monograph issued recently by the American Medical Association, Chicago, Illinois, in which Alice Hamilton, M.D., of Boston, Massachusetts, deprecates the increasing substitution since the war in many industries of benzene for the less powerful but less poisonous, though now somewhat dearer solvent, petroleum benzine. The findings of this investigator coincide with those of Dr. Robert S. Quinby, of the Hood Rubber Co., Watertown, Massachusetts, reported a year ago on "Benzol Poisoning in Rubber Factories," as to the way in which the coal-tar distillate exerts its toxic effects on exposed or susceptible workers.

Dr. Hamilton almost despairs of adequately overcoming the threatened danger. The inhalation of more or less benzene wherever that solvent is used is, she says, inescapable; nor does she regard it as often feasible to install a strong suction exhaust at the point of origin of the toxic fumes, as in the cementing of boot seams, building of pneumatic tires, etc. "The practical difficulties," she concludes, "are insurmountable." She fails, however, to note that many large rubber works in the United States have discarded benzene entirely and have substituted comparatively harmless rubber solvents, while others that have continued the use of benzene have greatly improved shop ventilation, carry on benzene operations in closed containers, and even fill such containers by gravity from storage tanks or by other mechanical devices.

New Trade Publications

THE THIRTEENTH ANNUAL REPORT OF THE RUBBER GROWERS' Association, Inc., recounts the activities of this organization during the year 1921, while two supplementary bulletins concerning propaganda for the rubber industry include many suggestions. Conditions during 1921, "the most critical period of the industry," are reviewed, and measures proposed with a view to remedying the prevailing state of affairs.

IN A RECENT ISSUE OF *The Wigwam*, THE HOUSE ORGAN OF The Spreckels "Savage" Tire Co., San Diego, California, are some interesting items regarding this company's western activities, with suggestions along sales and advertising lines. These have been written by R. V. Morris, vice-president and general manager; Royal B. Lee, advertising manager; and Wayne Compton, assistant sales manager. Illustrations are cleverly introduced which feature various phases of Indian life.

STAMFORD RUBBER SUPPLY CO. ANNOUNCES WINNERS

The Stamford Rubber Supply Co., Stamford, Connecticut, which recently offered four prizes of $100, $75, $50 and $25 for the best four papers discussing any phase of the general subject, "The Uses of Factice In Rubber Compounding," announces the following as winners:

First prize to A. D. Thornton, Montreal, Canada. Subject, "Factice."

Second prize to S. G. Byam, technical superintendent of The Plymouth Rubber Co., Canton, Massachusetts. Subject, "Uses of Factice in Proofing."

Third prize to Wellington F. Butler, B. C., Fairfield, Connecticut. Subject, "Uses of Factice in Rubber Cements."

Fourth prize to William N. Blodgett, Los Angeles, California. Subject, "The Practical Side of the Use of Factice."

Other papers elected by the judges and retained by the company under the terms of the contest included:

"Economic Value of Factice in Rubber Compounding," by L. D. Ackerman, Malden, Massachusetts;

"The Uses of Rubber Factice in Rubber Compounding," by Michael Berman, Brooklyn, New York;

"The Advantages of Factice in Rubber Compounding," by Arthur E. Friswell, Jersey City, New Jersey;

"Proofing: Why I Use Stamford Factice," by Hugh J. Greechan, Mamaroneck, New York;

"Uses of Factice in Proofing," by C. L. Wanamaker, New Haven, Connecticut;

"Rubber Factice in the Manufacture of Rubber Covered Rolls," by Charles Yahraus, Woonsocket, Rhode Island.

Golf Ball Tapes and Windings

Preparing the Rubber—Compounding—Calendering—Curing—The Cutting Lathe—Separating and Warping the Thread

THE rubber-cored golf ball owes its existence to a novel use of strips of india rubber wound under high tension. It dates back to 1898 when Bertram G. Work, of Akron, and Coburn Haskell, of Cleveland, patented an elastic-cored golf ball. The story of its almost instant adoption over the solid gutta percha ball is well known. With the success of this type of ball came hundreds of other patents exploiting variants of the same principle. Rubber tapes and strips of varying widths of an infinite variety of compoundings, some with beveled edges, others with squared edges, some with roughened surfaces, others with smooth, and so on, but all attempting to utilize the principle of rubber strips wound under tension and covered with a gutta percha or balata shell, were employed.

The production of such windings requires special equipment, skill and experience. The following outline includes the general features of this work.

Preparatory Processes

Old dry upriver fine Pará is the most reliable crude rubber for this work.

The rubber biscuits are softened by soaking in tanks of hot water to loosen adhering surface dirt, which is removed by hand scrubbing. The cleaned and softened balls are sliced by a disk cutter into slabs about an inch in thickness. The cut rubber is cracked and then washed by the usual two-roll washer. This operation is done with exceeding thoroughness to eliminate every trace of mechanical impurity. After loft or kiln drying for days at moderate temperature the gum is ready for breaking down and compounding. The breaking down and mixing operations are of very limited duration that the nerve or strength of the rubber may not be impaired.

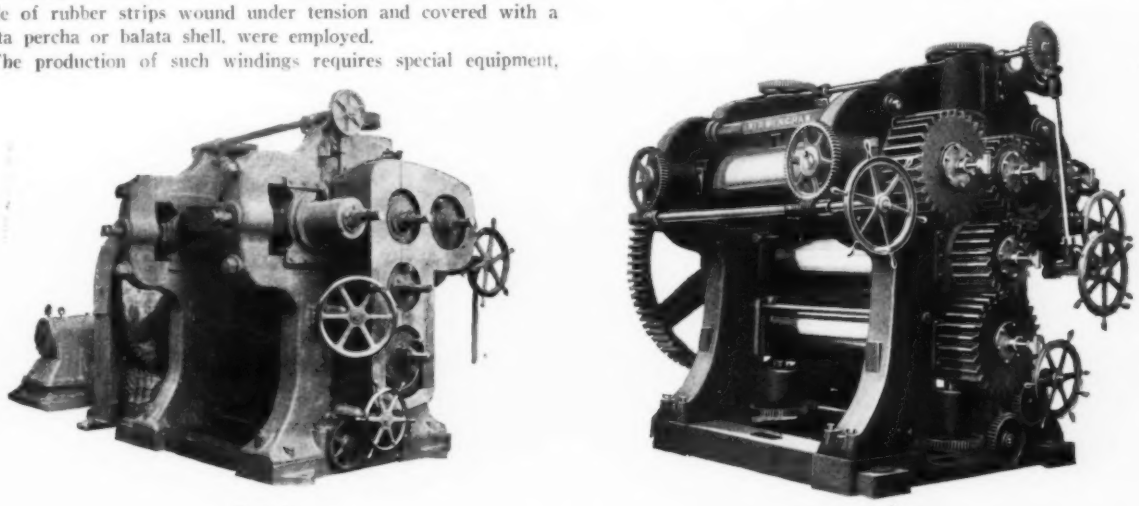
Compounding

The best stock consists of pure gum with addition of pure soft sulphur only to the extent of 6.22 per cent. Uniform distribution of the sulphur through the rubber is effected by sifting it through a screen supported full length over the mill rolls. The sulphur dust is quickly absorbed by the warm plastic gum. The mixed stock is then removed in small rolls and set aside to cool for 24 hours.

Calendering

Calendering the rubber is a most particular operation conducted on special five-roll calenders illustrated in Fig. 1.

A calender of this sort will produce sheets free of air bubbles and uniform in thickness. The finest talc is used for dusting the calendered stock which, after cooling, is prepared for curing by being very evenly and smoothly wrapped on steel drums in liners or sheeting of exceeding fineness and perfection of weaving. Liners of such quality are necessary because the impression made by the liner on the sheet must be as light as possible so as not to cause serious impairment of the strength of the threads cut from it.



Farrel Birmingham

Fig. 1.—Five Roll Calenders

Curing

The wrapping of the raw sheet in its liner takes place on an iron curing drum with careful elimination of all wrinkles. Three or four drums of wrapped sheet are placed on end, one upon the other, in a deep vertically placed vulcanizer. In appearance the vulcanizer resembles the ordinary tire vulcanizer without the internal hydraulic press feature.

Curing is a very particular operation and can be done successfully only in hot water because that method alone allows slow and uniform heating. An overhead hoisting and trolley system is used for loading the heater, three or four wrapped drums being placed end upon end in the vulcanizer which is then completely filled with water and the heat raised to curing temperature by steam pressure for the required time of cure. Vulcanization is regulated by time and temperature instruments to insure uniformity and to check results.

Cutting the Sheet

The cured rubber sheet from the vulcanizer is removed from its liner and washed in a tank of water for removal of the talc from its surface. It is then air dried and transferred to the cutting drums. This is done by a special winding machine illustrated in Fig. 2. From 10 to 18 plies of sheet are wound from roll A onto the cutting drum B, passing through a pair of

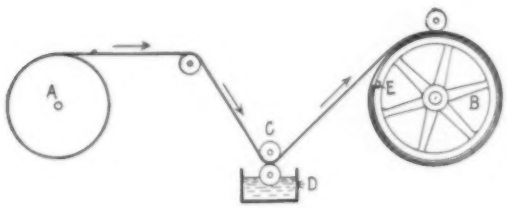
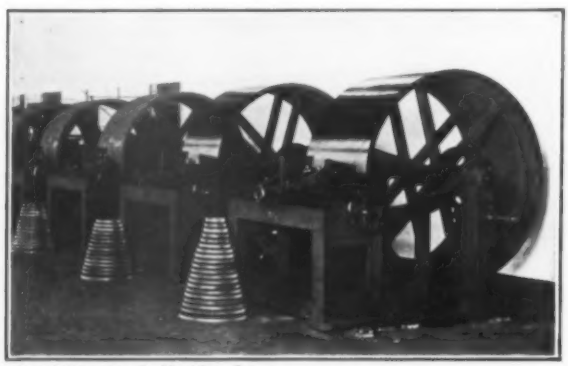


Fig. 2.—Shellacking and Winding Machine

shellacking rolls C, the lower one of which dips into a solution of orange shellac contained in a trough B. A light coat of shellac is thus applied to the under surface of the rubber sheet. The function of the shellac is to unite the sheet rubber into a compact mass for cutting. The first end of the sheet as applied to the drum B is held firmly by a square bar of wood E fitted tightly into a slot across the face of the drum. The last end of the sheet is held by the adhesive effect of the shellac. The hardening of the shellac takes place slowly between the rubber plies, assisted by placing the drum in a drying compartment for a time at a mild heat.

The Cutting Lathe

The illustration, Fig. 3, shows a row of cutting lathes with stock drums mounted on nine of them and a set of change gears in front of them. This machine is specially designed for rapidity and accuracy in cutting and is used for that purpose only. The equipment comprises a disk knife supported in a carriage operated



Farrel Foundry & Machine Co.

Fig. 3.—Sheet Rubber Cutting Lathes

by automatic screw-feed and traversing the face of the stock drum. The speed of the knife is about 3,000 revolutions a minute. It is encased and runs in water to facilitate cutting. The drum turns only a few times a minute. The knife-feed is adjustable to produce any fineness of cut required up to 50 per inch.

Separating

After cutting the shellacked sheets the individual tapes or windings are separated by boiling out the shellac binder in water containing soda. The whole is then unwrapped from the drum, the outer ends being held together by tying, while the inner ends remain united at the end of the sheet that was held fast by the wooden bar in the slot in the drum as mentioned above. The wet bundles are hung to dry over bars arranged in a warm room preparatory to being counted and bundled into hanks in the warping alley, and made ready for use.

Warping

The equipment of the warping alley consists of long low inclined tables with raised edges, and provided across either end and the middle with wooden pins. These serve to keep apart the threads as counted into hanks. The usual length of the strips as made is 60 yards. It is necessary to place the product under more or less tension to facilitate handling it, consequently the warping tables are made somewhat longer than 60 yards. On tables of this sort each cut of the sheet is counted, dusted with talc, inspected and doubled into hanks. In this condition it is stored in bins by size numbers ready for use.

The Automobile Industry in 1921

The phenomenal increase of the automobile industry in the United States is indicated in the following official figures from "Facts and Figures of the Automotive Industry," 1922 issue, published by the National Automobile Chamber of Commerce, New York, N. Y.

Statistics for 1921

The registration of cars and trucks was 10,448,632, a gain of 13 per cent over the registration for 1920. The value of tire replacements was $542,358,420, and the number of tire casings produced was 27,275,000.

Annual Production of Motor Vehicles

PASSENGER AND COMMERCIAL COMBINED

Year	Number	Wholesale Value	Year	Number	Wholesale Value
*1899.....	3,700	$4,750,000	1912.....	378,000	$378,000,000
1903.....	11,000	12,650,000	1913.....	485,000	425,000,000
*1904.....	21,975	30,864,616	*1914.....	569,045	458,957,843
1905.....	25,000	40,000,000	1915.....	892,618	691,778,950
1906.....	34,000	62,900,000	1916.....	1,583,617	954,969,353
1908.....	65,000	137,800,000	†1917.....	1,868,947	1,274,488,449
*1909.....	127,731	165,148,529	†1918.....	1,153,637	1,236,106,917
1910.....	187,000	225,000,000	1919.....	1,974,016	1,885,112,546
1911.....	210,000	262,500,000	1920.....	2,205,197	2,232,927,628
			1921.....	1,668,550	1,260,000,000

PASSENGER CARS			MOTOR TRUCKS		
*1899.....	3,700	$4,750,000	*1904.....	411	$946,947
*1904.....	21,281	23,634,367	*1909.....	3,255	5,230,023
*1909.....	127,731	159,918,506	1903 to 1910	10,374	20,485,500
1910.....	181,000	213,000,000	1911.....	10,655	22,292,321
1911.....	199,319	240,770,000	1912.....	22,000	43,000,000
1912.....	356,000	335,000,000	1913.....	23,500	44,000,000
1913.....	461,500	399,902,000	*1914.....	25,375	45,098,464
*1914.....	543,679	413,859,379	1915.....	74,000	125,800,000
1915.....	818,618	565,978,950	1916.....	90,000	157,500,000
1916.....	1,493,617	797,469,353	†1917.....	128,157	220,982,668
†1917.....	1,740,792	1,053,505,781	†1918.....	227,250	434,168,992
†1918.....	926,388	801,937,925	1919.....	316,364	423,326,621
1919.....	1,657,652	1,461,785,925	1920.....	322,039	423,756,715
1920.....	1,883,158	1,809,170,963	1921.....	154,550	166,082,000
1921.....	1,514,000	1,093,918,000			

*From U. S. Census reports.
†Production figures compiled by Automotive Products Section, War Industries Board, from sworn statements by manufacturers.

1921 Truck Production by Capacities

Size	Number	Per Cent	Size	Number	Per Cent
¾-ton.....	33,809	21.9	3½-ton.....	3,343	2.2
1-ton.....	79,844	51.6	5-ton.....	9,714	6.3
1½-ton.....	7,076	4.6	Over 5-ton.....	3,600	2.3
2-ton.....	13,206	8.5			
2½-ton.....	3,958	2.6	Totals.....	154,550	100

1921 Tire Production

Tire casings produced.....	27,275,000
Inner tubes produced.....	33,878,000*
Solid tires produced.....	529,705*
Crude rubber consumed in 1921 tire production, pounds.....	379,000,000†

*Estimated from figures compiled by The Rubber Association of America considering their figures as representing 80 per cent of the total.
†From questionnaires sent out by The Rubber Association, the results of which represented about 90 per cent of the total crude rubber consumed in the production of tires.

What the Rubber Chemists Are Doing

A Photomicrographic Method for the Determination of Particle Size of Paint and Rubber Pigments[1]

By Henry Green, B. S.[2]

THE following brief extracts will suffice to indicate the importance of fineness of particle size in the manufacture of paints and rubber goods. The author says:

The character and behavior of fine pigments depends to a large extent on the magnitude of their specific surface.

Specific surface is inversely proportional to the "diameter" of the particle or to "particle size." Such qualities of a pigment as tint, brightness, hiding power, and oil absorption, in paints, and resistance offered to abrasion, in rubber, are functions of particle size. It would be a great mistake, however, to assume that these qualities depend *entirely* on particle size. Other factors enter in, such as index of refraction, density, color, and forces of adhesion and surface tension.

As matter of fact, the author feels no hesitancy in predicting that within the next few years the manufacturer of fine pigments who wishes to maintain his position in a keenly competitive field will find it necessary not only to become acquainted with the particle size of his products to the first, but even to the second, and probably the third, decimal place in microns.[3]

The Method

Briefly stated, the pigment is prepared in such a manner that a photomicrograph, at a known magnification, can be taken, showing clearly and distinctly the individual particles, which are then measured from the negative.

The negative, which must show from 200 to 250 distinct particles, is placed in a stereopticon and an image of it thrown on a screen, so situated that the total magnification of the original particle will be from 20,000 to 25,000 diameters. The image of the particles is measured with a millimeter rule. Particles which are out of focus to any extent at all, as the case will be with those around the border of the negative, must be neglected. In order to eliminate the possibility of duplication and skipping, the area of the screen is divided into small squares. The length of time required for the measurement of a single particle should be approximately two seconds.

Summary

This method of determining the "diameter" of paint and rubber pigments comprises: (a) the method of dispersing and mounting the pigment so as to make it suitable for photomicroscopy; (b) the method of determining the magnification of the microscope and stereopticon; (c) the method of measurement; (d) calculation of the probable error; (e) determination of the uniformity coefficient.

The meaning of "particle size" is discussed. That dimension which bears the simplest relationship to specific surface has been selected as the "diameter" of the particle.

The results of the measurements of various pigments are given in tables.

[1] Journal of the Franklin Institute, November, 1921.
[2] The Research Laboratory of The New Jersey Zinc Co., Palmerton, Pennsylvania.
[3] A micron is one one-thousandth of a millimeter.

Undercured Smoked Sheet

Undercured smoked sheet has been defined as that which possesses more internal moisture than a correctly-cured sheet. The term has also been used previously in connection with a light-colored smoked sheet. The Singapore Chamber of Commerce has upheld the rubber appraisers' decision that undercured rubber can be distinguished by the opacity exhibited at a freshly-cut section when viewed against bright daylight. It was also asserted that any samples of smoked sheet giving a plainly-marked opaque section were abnormally damp, would develop mold, and also would give unusual trouble to the purchaser when the rubber came to be manufactured into the vulcanized commodity.

R. O. Bishop, acting agricultural chemist, has reported on these matters[1] and summarized the investigation as follows:

Conclusions

(1) All smoked sheet contains moisture.

This may amount to one per cent without being abnormal, and averages about one-half per cent. (2) Of the total moisture about 70 per cent is held as surface moisture. This is apparently held in an adsorbed state and consequently is subject to variation, dependent on the atmospheric humidity and the amount of serum solids left in the finished sheet. (3) Examination of the samples submitted did not demonstrate that there was any significant difference in total moisture between those samples with opaque inner sections and those without. (4) The opacity was not a characteristic of high internal moisture. Opaque and non-opaque sheets had the same average internal moisture content, of 0.18 per cent.

Liability to Mold Development

There does appear to be some relation between internal moisture and order of mold development but the relation is not very marked and as the same order persisted on the samples after they had been completely dried and again allowed to develop mold, it would appear to be probable that the substances in the rubber which promote mold growth seem to increase the moisture content and it is not the moisture of the rubber which gives rise to the mold.

Vulcanizing Capacity

With regard to the vulcanizing properties of the samples of smoked sheet and the tensile properties of the vulcanized products, the results showed that the amount of moisture contained even in the wettest samples had no apparent effect.

[1] Agricultural Bulletin of the Federated Malay States, Volume IX, 1921, No. 2, 79-85.

Mold Prevention[1]

Heavy wet molds may affect the vulcanizing properties, particularly the rate of cure, of rubber, but this type of mold is seldom, if ever met with if proper methods and due care are employed in preparation. Light surface molds may form on well cured rubber, not only subsequent to smoking and before packing, but also during transit, so that, although rubber was in good condition when it left the estate, it may be delivered in Europe or America contaminated with light surface mold. Tests made show that these light molds do not affect the vulcanizing properties of the rubber.[2] The ordinary means of prevention, particularly scouring and hanging, do not always give the desired results, and a search has been made for a harmless fungicide which would be effective when added to the latex before coagulation or dusted on the sheet when packed.

Sodium silico fluoride, which is cheap, appears to be effective as a preservative and to have no bad effect on the vulcanizing

[1] Dr. H. P. Stevens, Bulletin of the Rubber Growers' Association, March, 1922.
[2] The India Rubber World, February 1, 1922.

properties of the rubber. Working experimentally with proportions above 1.8 g. to 3,000 cc. of latex no trace of mold could be developed on the sheet. It is noticeable that a particularly clean coagulation took place in all cases of latex treated in this way. Under conditions of transit such as to induce mustiness, rubber coagulated from latex with addition of the silico fluoride showed marked resistance to mold growth. Pending further investigation the use of sodium silico fluoride is not advised except experimentally.

Relative Activity of Certain Accelerators in the Vulcanization of Rubber[1]

Using a mixture of rubber 50, sulphur 4, and zinc oxide 45 parts with varying proportions of accelerators and vulcanizing under a steam pressure of 45 pounds, aniline (4 parts) and *o*-toluidine (4 parts) were not very powerful in their effect, the physical condition of the rubber attaining an optimum in about 60 minutes; *p*-toluidine (4 parts) was more effective, the "optimum period" being 40 minutes, whilst dimethyl-aniline (4 parts) was practically ineffective, the period exceeding 90 minutes. *p*-nitrosodimethyl-aniline (0.59 part), *p*-phenylenediamine (0.59 part) and aldehyde-ammonia (1½ parts) were almost equally effective, reducing the optimum period to 30 minutes. One part of hexamethylene tetramine was as active as 2½ parts of thiocarbanilide (optimum period 50 minutes), but 5 parts of the latter reduced the time of optimum vulcanization to 5 minutes. Of the common inorganic accelerators, red lead is the most powerful, 1 part requiring a vulcanization period of 60 minutes for optimum physical results. With 18 parts of litharge the necessary time was only 20 minutes, while with a mixture of lime (3 parts) and calcined magnesia (2 parts) the period was 50 minutes.

[1]H. A. Endres, Le Caoutchouc et la Gutta-Percha, 1921, 18, 11089-11097.

Effect of Proportion of Coagulant on Rate of Cure[1]

The minimal quantity of acetic acid, 1 to 1,200, produces a faster vulcanizing and curing rubber than the minimal amounts of either sulphuric acid, 1 to 1,200, or alum, 1 to 400. Of these latter, alum retards less and therefore is preferable to sulphuric acid. These considerations also apply to proportionately larger quantities of these coagulants.

In general alum is a less satisfactory coagulant than acetic acid, and sulphuric acid is less satisfactory than either. The disadvantages of using alum and sulphuric acid are greater when the rubber is prepared as sheet than when washed and marketed as crêpe.

[1]Dr. H. P. Stevens. Bulletin of the Rubber Growers' Association, March, 1922.

Recently Published Articles Relating to Rubber

Preservation of Elasticity in Rubber

By Rudolf Ditmar[1]

FROM a review of the literature on the preservation of cured rubber it is concluded (1) that basic compounds disperse colloidal rubber; (2) that volatile bases effect a dispersion which returns to the aggregate condition only upon the slow evaporation of the base, and the less volatile the base the more favorable is its effect upon the colloidal rubber and the longer its influence endures; (3) that by successive transformations from the disperse to the aggregate condition, the elasticity and initial properties in general are preserved and, (4) that the elasticity of rubber can be artificially preserved by the artificial stimulation of its dispersive power by incorporation of basic compounds. Since rubber has been shown to be a negative colloid it will remain longest in its colloidal state in the presence of basic compounds, and the presence of such compounds as aniline not only accelerate the cure by increasing the dispersion of the rubber colloid so that sulphur is more easily absorbed, but increase the ultimate life of the cured rubber by preserving the colloid in its disperse state.

[1] "The Preservation of Elasticity in Rubber by Artifical Stimulation of Colloid Activity by Means of Alkalies and Other Dispersing Mediums." Zeitschrift für Angewandte Chemie, 34, Aufsatzteil, 465-6, 1921.

Some Physical Properties of Rubber Compounded with Light Magnesium Carbonate[1]

By H. W. Greider[2]

In this paper are given data showing that light magnesium carbonate behaves as a typical reinforcing pigment, increasing the tensile strength, hardness, stiffness, and resilient energy capacity of rubber in which it is compounded. Comparison is made between the physical properties of rubber compounded with magnesium carbonate and with other commercial rubber reinforcing fillers, including zinc oxide, gas black, prepared china-clay, and colloidal barium sulphate. The results indicate that magnesium carbonate is exceeded in reinforcing power only by gas black.

The principal disadvantage of magnesium carbonate in rubber, namely, the property of high permanent set imparted to the vulcanized product, is attributable to the definite crystalline character of the particles. The author believes that the application of the principles of colloid chemistry to the conditions of the commercial precipitation process will enable this material to be prepared in an amorphous form which will make it much more valuable as a rubber compounding material.

[1] Presented before the Division of Rubber Chemistry at meeting of the American Chemical Society, Birmingham, Alabama, April 3-7, 1922.

[2] Industrial Fellow, Mellon Institute of Industrial Research.

Commercial Antimony Pentasulphide

By N. A. Shirk and N. R. Wilson[1]

The analyses tabulated below illustrate the relatively small proportions in which antimony pentasulphide is present in typical grades of antimony sulphide.

	English	French	German
Free sulphur	17.9	7.3	15.2
Antimony trisulphide	23.7	73.7	60.5
Antimony pentasulphide	8.8	16.1	19.2
Calcium sulphate	50.4	3.2	5.3
	100.8	100.3	100.2

These figures do not prove that the pentasulphide does not exist in a high degree of purity, in fact it may be made 90 to 95 per cent pure. On a commercial scale it can be obtained containing 75 to 80 per cent, with the chemical and physical stability necessary to withstand the conditions of vulcanization. This product has an obscuring power equal to that of gas black. This quality is not obtained at the expense of color stability in vulcanization, which is greater than in other grades containing lower percentages of pentasulphide.

The paper includes methods of analysis and calculation, concluding with the following notes regarding results of heat tests

[1] Rare Metal Products Co., Belleville, New Jersey.

made on pentasulphide: (1) No sulphur is liberated without distinct change of color of the pentasulphide; (2) for a given sample the amount of sulphur liberated by heat decomposition is roughly proportional to the color change; (3) complete decomposition is obtained only when the sample undergoes full change from orange to black.

Permanent Set of Rubber

By F. W. G. King and A. C. Cogswell[1]

Comparison of the permanent set for different vulcanized rubbers is more conveniently made using a constant extension rather than a constant load. In order to insure uniformity in the results a reasonably high stress or strain is desirable, a period of 20 minutes being sufficient for the application of the stress. Before the measurement of the permanent set an interval of 5 hours or even less is sufficient, the greater part of the recovery occurring in the first hour.

[1]The India-Rubber Journal, 1922, 30-32.

Bruni's Process of Cold Vulcanization

By A. D. Duttringer[1]

The new process of Bruni[2] for vulcanizing in the cold depends upon the formation of an organic accelerator within the mass of an ordinary rubber sulphur mixture. By the synthesis of the accelerator uniformly within the mass, the accelerator shows an abnormally high activity compared with that resulting from its usual method of incorporation.

Two procedures can be employed, (1) a mixture of rubber, zinc oxide and aniline is exposed to the action of carbon disulphide vapor at room temperature or (2) the same mixture is dispersed in an inert solvent like benzol or carbon tetrachloride and excess carbon disulphide is added to the solution or suspension. By evaporating a perfectly vulcanized residue remains. Analine can be replaced by its homologs, or by other types of aromatic amines, which form substituted dithioureas. The presence of a metallic oxide is essential. A mixture cited is 100 rubber, 8 sulphur, 20 zinc oxide, 6 aniline, dispersed in 600 of benzol. Addition to this of 300 of carbon disulphide yields at room temperature on evaporation a perfectly cured product.

[1] Le Caoutchouc et la Gutta-Percha, 18, 11018-9, 1921.
[2] Giornale di Chimica Industriale ed Applicata, May, 1921.

Methods of Analysis

Analysis of Gutta Percha for Insulation Purposes[1]

In the case of insulated wire the sample should be stripped cleanly from the copper wire. Cut all samples into very small pieces and take an average for each estimation.

Resins

Resins or matter soluble in cold ether (methylated). Into a small dry conical flask weigh 1 g. of sample. Add 50 cc. of dry ether and then cork, allowing to stand for 12 hours in the cool. Filter through a paper into a weighted CO_2 flask. Wash residue and filter paper several times with ether. Distil off ether from solution in CO_2 flask and dry flask and residue in a water-oven until a constant weight is obtained.

Benzene Insoluble

Matter insoluble in benzene. Into a small-lipped beaker weigh 1 g. of sample and add 25 cc. of benzene. Dry and weigh a centrifuge tube (10 cc.). Place beaker containing sample and benzol in a water bath at 50 degrees C (122 F.) and stir with a glass rod until all appears to be in solution. Pour off a portion into centrifuge tube and rotate in machine until insoluble matter completely settles. Decant off clear liquid and repeat. Wash and scrub beaker finally with quill and warm benzol and also wash residue in centrifuge tube with benzene, rotating as usual. Dry tube and residue in a water-oven and weigh until constant weight is obtained.

Water and Volatile Matter

Water and volatile matter at 100 degrees C., (212 degrees F.). Place 1 g. of sample on a weighed watch glass and in a water oven for two hours. Reheat and weigh at hourly intervals until constant weight is obtained.

Ash

Ignite 1 g. in a weighed crucible over a Bunsen flame and then in a muffle until constant weight is obtained.

Stretching Test

Take about 15 g. of sample and put in water at 77 degrees C. (171 degrees F.). Mold together into compact piece and mix well with occasional immersion in the warm water. Finally pull out into a thin sheet stretching in all directions. The toughness, clearness, stickiness of the thin film should then be noted.

Gutta

The sum of the percentage of resin, benzene insoluble, water, and volatile matter deducted from 100 gives the gutta by difference. The ash is excluded from the total.

A good specimen of gutta percha should give from 68 per cent to 72 per cent of gutta by difference and not more than 29 per cent of resins or 2 per cent insoluble in benzene or 2 per cent of water. The ash should not be more than 2 per cent and the stretching test good.

[1]By Victor A. Stock, Chemist-Analyst, No. 35, 1921.

FIREPROOFING COTTON FABRICS

The effect of certain solutions on the tensile strength of cotton fabrics, when used for fireproofing them, has been studied by R. L. Sibley[1]. The solutions used for test were: (*a*) alum, followed by boiling the sample in sodium carbonate solution; (*b*) ammonium chloride, borax and common salt; (*c*) ammonium chloride, borax, and boracic acid; (*d*) 15 per cent solution sodium tungstate; (*e*) borax and glucose; (*f*) 3.5 per cent solution of sodium tungstate; (*g*) borax and Epsom salt. Test samples were made from tire duck and from 36-ounce duck, boiled in the solutions named and air-dried for three days before testing for tensile strength.

No breaking tests could be obtained on the fabric treated with solution *a* because the fabric was so seriously affected by the alum as to be easily torn apart in the fingers. Solutions *b*, *c*, *e* and *g* quite impaired the strength of the fabrics, especially the light-weight ducks. Solutions *d* and *f* practically did not injure the strength of the goods.

Conclusions

The author's conclusions follow:

1. Of the three types of fireproofing agents tested, sodium tungstate showed the least effect in the breaking strength of the fabric, and therefore the least weakening action.

2. A test of the fireproofing qualities of the solutions showed the 3.5 per cent solution of sodium tungstate to be practically as efficient as the stronger solution. This, then, is recommended as an excellent fireproofing agent for the impregnation of cotton fabric whose breaking strength and wearing qualities must not be materially weakened by the process employed.

[1]Research Laboratories, The Goodyear Tire & Rubber Co., Akron, Ohio.

Chemical Patents

The United States

LEATHER SUBSTITUTE. Loose napped fabric impregnated with a binding agent and subjected to drying and pressure under tension.—Roland B. Respess, New York, N. Y., assignor to Respro Inc., Cranston, Rhode Island. United States patent No. 1,411,376.

MANUFACTURE OF LITHOPONE. Five patents assigned to The New Jersey Zinc Co., New York, N. Y. United States patents Nos. 1,411,645, 1,411,646, 1,411,647, 1,411,648 and 1,414,793.

TREATING RUBBER TIRES. The process of repairing old rubber tires by first applying to them a compound including carbon tetrachloride and a vegetable oil, vulcanizing for a short time, then applying rubber cement, and finally thoroughly vulcanizing.—Achille A. Baffetti, Chicago, Illinois. United States patent No. 1,412,992.

BELT-DRESSING COMPOSITION. A liquid friction dressing comprising melted vulcanized rubber having a powdered friction material incorporated. Louis M. Fisher, Clarksdale, Missouri. United States patent No. 1,411,912.

DENTAL RUBBER. A vulcanizable dental base plate composition which when vulcanized is strong, hard, tough and of a pink color. T. A. Swartz, Huguenot Park, and E. F. Ottmyer, Prince Bay, New York, assignors to the S. S. White Dental Manufacturing Co., a Pennsylvania corporation. United States patent No. 1,413,071.

VULCANIZATION ACCELERATOR. A vulcanized rubber compound containing before vulcanization a vulcanizing agent and a tetra-alkylated thiuramdisulphide, in which the substituting groups are hydrocarbon radicals. Benjamin E. Lorentz, Fort Wayne, Indiana, assignor by mesne assignments to R. T. Vanderbilt Co., New York, N. Y. United States patent No. 1,413,172.

COMPOSITIONS. Vulcanized compositions and products having phenanthrene incorporated prior to vulcanization. Ralph O. Phillips, Somerville, Massachusetts, assignor to The Barrett Co., of New Jersey. United States patent No. 1,413,557.

VULCANIZATION OF RUBBER, ETC. Acceleration of vulcanization by adding to the rubber mixing a solution of caustic alkali in an aromatic hydroxy-compound. Douglas F. Twiss, Sutton Coldfield, England, assignor to The Dunlop Rubber Co., Limited, Westminster, London, England. United States patent No. 1,413,813.

METHOD OF MAKING PRECIPITATED ANTIMONY SULPHIDE. Arthur L. Stark, assignor to The Stibnium Products Co.—both of Elyria, Ohio. United States patents Nos. 1,414,836 and 1,414,837.

The Dominion of Canada

METHOD OF MAKING SPONGE RUBBER. A number of volatile ingredients adapted to be transformed into gaseous fluids at various temperatures, none greater than that required for vulcanization, are intimately mixed with rubber composition. The mixing is subjected successively to increasing degrees of heat in a mold, each adapted to transform at least one volatile ingredient and finally raising the heat to vulcanizing temperature.—Josef Huebner, Detroit, Michigan, U. S. A. Canadian patent No. 217,617.

TREATING GOLF BALLS. A quick-curing vulcanizable cover is applied that will further set by aging at ordinary temperature. After partial curing, the ball is dipped in a highly dilute solution of sulphur chloride in benzol, and the ball painted.—The B. F. Goodrich Co., New York, N. Y., assignee of Harry A. Hoffman, Akron, Ohio.—both in U. S. A. Canadian patent No. 217,687.

The United Kingdom

CEMENTING LEATHER, ETC. Rubber, leather, etc., are cemented by a gel of vulcanized rubber.—S. J. Peachey, 5 Yew Tree Road, Davenport, England. British patent No. 170,073.

TYRE-FILLING COMPOSITION. A mixture of vegetable oils treated with sulphur chloride and magnesia and blended so as to have an iodine value of 110. Typical mixture: rape oil and soya-bean oil, each 12 pounds; calcined magnesia, 1½ pounds; Venetian red, 6 ounces; and sulphur chloride, 5 pounds, 1 ounce.—W. H. Hayward and Adanac, Limited, Dashwood House, New Broad Street, London. British patent No. 175,389.

Germany

Patents Issued, with Dates of Issue

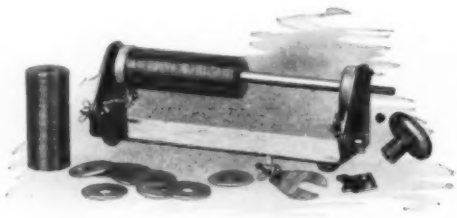
353,232 (February 14, 1920) Method of making masses resembling hard and soft rubber. Plauson's Forschungs-institut G. m. b. H., Hamburg.

354,172 (December 10, 1920) Method of making sulphured oils, particularly factice. Farbenfabriken, formerly Frederich Bayer & Co., Leverküsen, near Cologne-on-the-Rhine.

Laboratory Apparatus

Rheostat for General Laboratory Use

The rheostat here illustrated is designed to meet a need in the laboratory where fine current control is necessary for electric muffle and combustion furnaces where a portable, flexible instrument finds daily application in general laboratory work. The instrument pictured is the graphic compression type of rheostat composed of a column of treated graphite disks mounted on an insulated rod. It offers the widest resistance with more thermal capacity than any wire-wound resistance unit, or units made up of carbon plates. Carbon does not have the thermal capacity of graphite.—Allen-Bradley Co., Milwaukee, Wisconsin.



Compression Type Rheostat

COLOR BASES OF THE BASIC DYES AS ACCELERATORS

In a Recent Paper[1] by J. L. Rosenbaum

The history of accelerators was reviewed and the mechanism of their action discussed.

Mr. Rosenbaum described a group of accelerators which he had discovered in the laboratories of the Hooley Hill Rubber & Chemical Co. Investigation of the color bases of the basic dyes showed that many of them, for example, methyl violet base, possess very marked accelerating efficiency, and that the color produced in the mixing persisted during vulcanization even at high temperatures and in the presence of excess of sulphur. Of other color bases some, for example, auramine base, are very good accelerators, but lose their color on vulcanization, others retain their color, but are poor accelerators. It was ultimately discovered that all the color bases of the basic organic dyestuffs can be used as accelerators, and this use was patented.[2]

When using an accelerator, the best commercial results can be obtained by diminishing the quantity of sulphur in the mixing. The use of accelerators also prevents blooming and improves the physical qualities and aging properties of the rubber. They can also be used in rubber covering for electric cables when no free sulphur is allowable in the mixing.

[1] "Rubber Mixtures and Accelerators," read at the meeting of the Institution of Rubber Industry, Manchester, England, February 6, 1922. Abstract from the Journal of the Society of Chemical Industry, February 28, 1922, 77R.

[2] English patent No. 141412, 1919. See Journal of the Society of Chemical Industry, 1920, 460A.

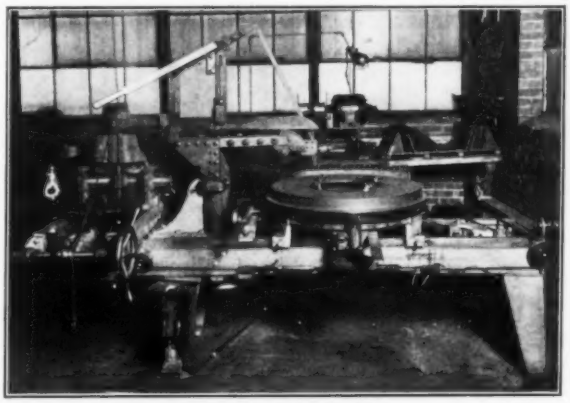
New Machines and Appliances

New Non-Skid Cutting Machine

A NEW motor driven machine for cutting non-skid tread designs in tire molds is here illustrated. In the left of the picture is seen that portion which holds the profile or design to be cut in the mold. The latter is bolted for cutting on the flat horizontal table seen in the center and turned by a circular rack and pinion. Between the profile controlling portion of the machine and the mold table stands a heavy post bracketed toward the latter for holding the cutting tool which is attached to a movable quadrant piece. A bar is pivoted on top of the post resting on this quadrant at one end and connected at the other with the upper part of the profile holding parts. This bar connects the cutting tool of high speed steel with the pen which follows the profile.

As the operator traces the profile the cutting tool is moved from side to side, while its vertical motion is governed by the L-shaped handle bar surmounting the central part. As sections of the mold are cut the operator, by means of the hand wheel in front of the profile holder, moves the profile, controlling by connecting gears the corresponding movement of the table.

The small size of the machine and its lightness are important advantages, also the fact that its operation can be controlled by one man. The speed of the machine is claimed to be at least 25



Franz Non-Skid Profiler

per cent greater than the average tread cutting machine and the accuracy of its work unsurpassed.—The Franz Foundry & Machine Co., Barberton, Ohio.

Connecting a Gage to an Electric Buzzer or Bell

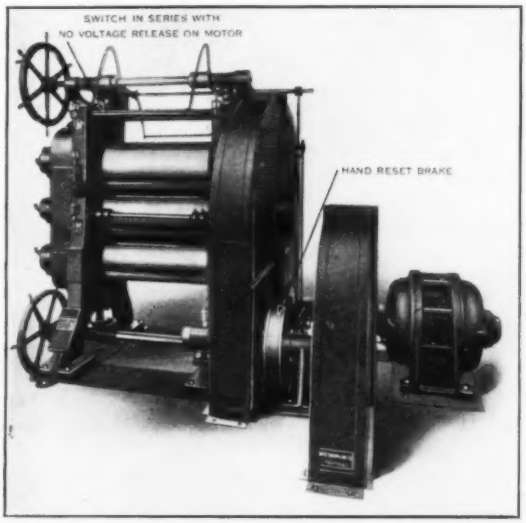
The usefulness of pressure gages that are installed in the offices of rubber mill superintendents can be greatly increased by an electric buzzer or bell attachment to give warning at any desired pressure.

A connection of this sort can be easily effected as follows: A slot is cut in the cast-iron gage case opposite the desired pressure for the insertion of a wire terminal fibre-insulated from the case. The gage pointer makes contact with this terminal through a range of five pounds above down to the minimum pressure selected. Contact within this range will ring the buzzer or bell as a warning.

The power is taken from a lighting circuit to a small transformer to reduce the voltage so that the current in the secondary circuit is 12 amperes. From the transformer, one wire runs to the terminal in the gage case and one to a snap-switch, thence to the buzzer or bell and on to ground through the pressure pipe connected with internal gage parts and pointer which is the second terminal.—E. J. Edwards, General Electric Co., Erie, Pennsylvania.

Calender for Hard Rubber Sheet

The calender here pictured is very convenient for narrow sheet work, particularly for hard rubber stock used as panels and bases



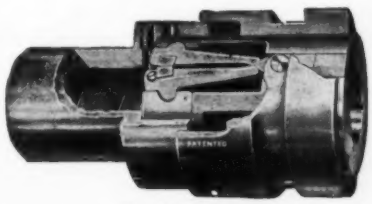
Hard Rubber Three Roll Calender

in radio instruments. It is equipped with a motor drive for alternating current and mechanical and electrical safety stop. A small switch in series with low voltage release on the motor is operated by overhead levers.

In case a workman should get both hands caught between the rolls this device disconnects the current from the motor and operates the hand reset brake that stops the momentum of the machine. All the gears and stuffing boxes are thoroughly covered with an improved form of guarding.—Wm. R. Thropp Sons' Co., Trenton, New Jersey.

Friction Clutches for Rubber Machinery

Increased power and speeds on rubber mill machinery are available by the use of improved friction clutches. Recent developments in heavy duty clutches are shown in the accompanying illustrations of the single and the double forms. The exteriors are smooth, having no projecting parts to cause accidents.



Single Clutch

The clutch body of the single form is fastened to the shaft and carries a split ring in which is inserted a pair of clutch toggle levers, the leverage of which is compounded so that little pressure is required to operate the clutch mechanism. A curve-shaped wedge riveted into a shipper sleeve slides the latter forward and backward when operated

by the clutch shifter handle. The toggle levers are thus forced apart, expanding the friction ring into contact with the inner surface of the friction cup. This cup is formed at the end of the sleeve or hub upon which can be mounted any kind of pulley, gears or sprocket.

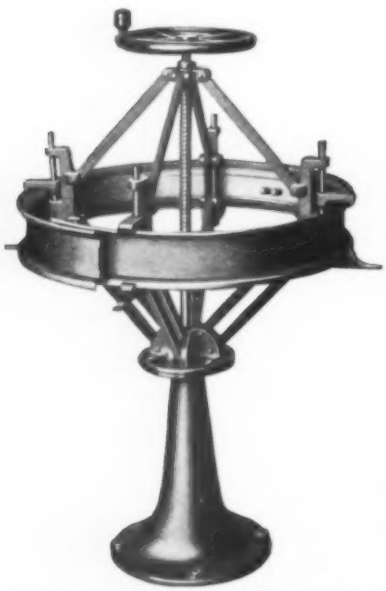
The double type of clutch can be used for two speeds forward with open belts or for forward and reverse motion on counter-

Double Clutch

shafts by crossing one of the driving belts, or by back gearing when spur gears are used. This type of clutch is employed on a well known tire building machine, also for rag winders, hose wrapping machine, etc.—The Carlyle Johnson Machine Co., Manchester, Connecticut.

Pneumatic Tire Changer

Tire repair men are frequently faced with a difficulty in removing a tire "frozen" by rust to a split rim. The machine illustrated is designed to obviate this difficulty. The machine is mounted on a pedestal at convenient height for working and consists of four jointed arms carrying brackets and hooks shaped to clamp over the rim and hold it, or draw it inward if collapsible, without injury. A tire can be easily and quickly removed without hammering or injury to the rim.



The Hudson Tire Changer

The device is operated by a hand wheel and screw which supply power enough to collapse or expand the stiffest split rim of all makes and sizes.—Hudson Products Co., Portland, Oregon.

Udylite Anti-Rust Process

High finish on inner tubes and the interior of hose cured on mandrels is essential in high-class goods and very desirable even in the cheaper sorts. Anti-rust processing of steel mandrels has come into use in recent years and has aided materially in maintaining the mandrel and hose-pole equipment of rubber manufacturers.

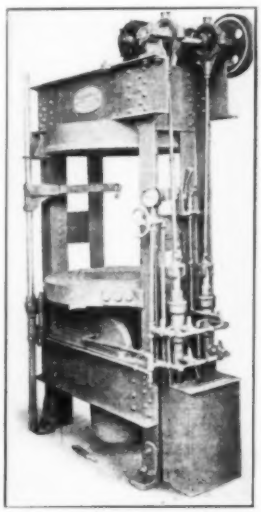
The Udylite process consists in electroplating cadmium metal on steel and by subsequent heat treatment causing the cadmium to penetrate the underlying metal and form with it an inseparable alloy. After this treatment some articles are nickelplated very effectively.—Wagner Rustproofing Co., 1714-18 Columbus Road, Cleveland, Ohio.

Heavy Tire Applying Press

A 225-ton hydraulic press for applying and removing pressed on solid truck tires is shown herewith. The operating principle is simple and no experience or special skill are required to install, operate and maintain this press.

The frame is of structural steel, hot riveted together. The cylinders, ram, platens and pump castings are semi-steel of special mixture. A 25-gallon oil tank holds the oil supply directly under the pumps. At the left of the illustration is shown a hydraulic swing lift which will raise the largest truck wheel off the floor and locate it centrally on the forcing rims between the platens.

The cylinder and ram are machine ground, polished, and accurately fitted. The platens are properly machined and the lower one has four alinement guides and a central opening to allow the hubs of wheels to enter. The machines are tested to 250 tons pressure and the relief valve is set at 225 tons.—Excelsior Tool & Machine Co., St. Louis, Missouri.

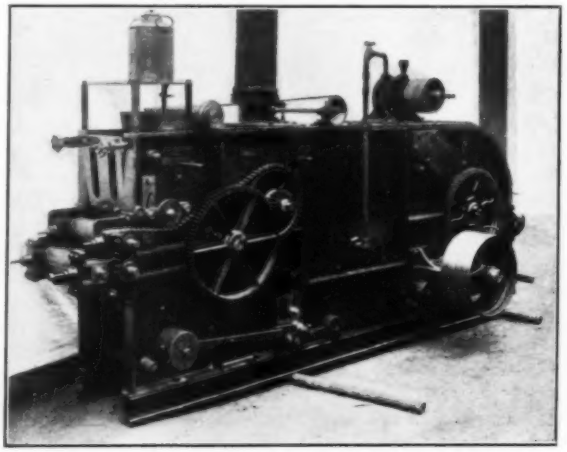


Excelsior Tire Applying Press

Machine for Making Standard Plantation Rubber

The well-known hand processes of coagulating and preparing plantation rubber yield products of variable quality. The "Roa" is one of the most successful machines designed to produce rubber of standard quality directly from the latex.

The process conducted by the machine shown in the illustration transforms the whole latex into standard quality rubber. In the space of one minute, latex placed in the machine is transformed into fine hard cure rubber that requires no handling beyond



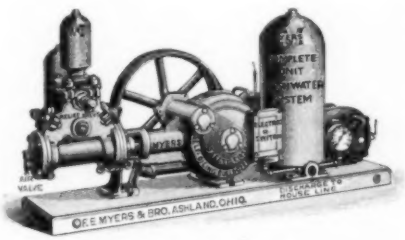
Roa Machine for Producing Rubber From Latex

pressing in retainers for a few hours to attain uniformity of quality and shape.

It is claimed that rubber by this process has been demonstrated to be superior to either crêpe or smoked sheet and identical in quality with fine hard Pará.—Roa, Limited, 9 Fenchurch Avenue, London, E. C. 3.

A Direct Water System Pump

The illustration pictures a very effective hydropneumatic pump designed for service in rubber mills, factories and wherever a water system from deep wells or cisterns is required. The apparatus is a complete unit, electrically driven. The only thing necessary in making the installation is to connect the inlet and discharge.



Myers Hydropneumatic Pump

The outfit comprises a self-oiling power pump with ½-horsepower motor, pressure gage, and switch. The air chamber on the line pipe is of sufficient size to properly cushion the stream. It is never necessary to draw more than one gallon of water until the pump starts, after which it pumps fresh water direct from the supply. This pump avoids the expense of a large storage tank and all its attendant disadvantages.—The F. E. Myers & Bro. Co., Ashland, Ohio.

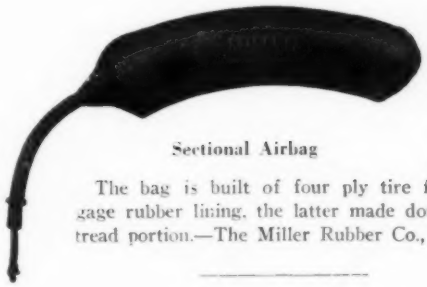
Cleaning Device for Machine Shop

Factory machine shops and tire repair departments generally will appreciate the convenience of this cleaning device. It consists of a covered cast-iron bowl mounted on a cast pedestal. A plunger pump is cast integral with the bowl at one side.

A gallon of gasoline, kerosene or other cleanser is poured into the bowl and circulated by the pump. It is merely necessary to hold the part to be cleaned under the stream of cleaning liquid which washes away dirt, chips, etc., depositing them on the screen. —The Black & Decker Manufacturing Co., Baltimore, Maryland.

Tire Repair Airbag

An airbag built to fit the tire section for repair work is shown in the illustration. The feature of this bag is that the inner tube is made from a rubber compound containing but very little curing material which enables it to remain soft and pliable and to withstand from 150 to 200 curings.



Sectional Airbag

The bag is built of four ply tire fabric and heavy gage rubber lining, the latter made doubly thick in the tread portion.—The Miller Rubber Co., Akron, Ohio.

Machinery Patents

Core and Vacuum Process for Making Balls

A mold for forming hollow balls, operated in connection with a core and vacuum, is here illustrated in two views, both representing a section of the two-part forming mold. Each half of this mold is cored and connected with each ball cavity for exhaustion of the air.

Two sheets of rubber are formed into half balls over the core and vacuum is applied which draws the rubber snugly into the ball cavities. The mold is then opened, the cores removed, the edges of the ball halves freshened with solvent, a pure rubber block inserted, and gas-producing material introduced to the ball interior to furnish inflating pressure.

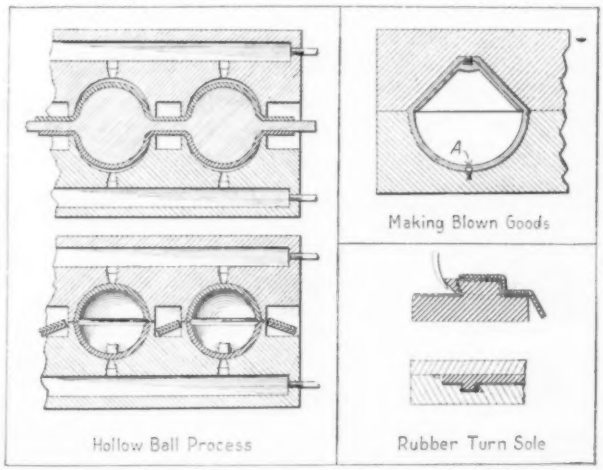
The mold is closed under pressure which serves to detach the surrounding sheet from the balls and produce a close union of the two halves into a full ball. The fully formed balls are next transferred to an ordinary curing mold for vulcanization.—Walter A. Eggers, Brooklyn, N. Y., and Theron Davis, New York, N. Y. The former assignor to the latter. United States patent No. 1,400,416.

Device for Perforating Blown Goods

Tank balls, bulbs and similar articles vulcanized in hollow form by expanding gas in a mold, may, by the following method, be vented or perforated automatically at the point desired, without loss of time necessary to cool the mold.

In the mold shown in the illustration and located at the desired perforation point is a metal spud A. It is the size of the perforation and provided with a cutting edge which stands sufficiently above the mold surface to nearly but not quite cut through the wall of the hollow rubber article.

On opening the hot mold the gas pressure inside the article bursts through the weakened wall venting the article and admitting the air. Variations on this method are also included in the invention.—Theron Davis, New York, N. Y. United States patent No. 1,409,154.



Methods of Making Hollow Balls—Blown Goods—Rubber Soles for Turn Shoes

Rubber Soles for Turn Shoes

The illustration of a molded rubber sole for turn shoes shows a section of one edge of a sole with a duck reinforced rib overlaid by an upper. The construction of the rib is such that the needle is guided by an overhanging lip so that it enters and passes through the base of the rib.

In molding, the duck reinforcement layer is laid next the cavity, upon this is placed the rubber blank, then sufficient pressure is exerted to form these plies into the cavity without fully interlocking with the overhang of the grooved cavity. The mold is then heated sufficiently, aided by the pressure upon the rubber in the mold, to cause a flow of rubber through the interstices of the fabric and form an elastic extension edge on the ridge.—Albert A. Somerville, Flushing, New York, assignor to New York Billing & Packing Co., a corporation of New York. United States patent No. 1,405,453.

Half Soling Tires

The difficulty and loss of time incident to handling the cemented parts in tire retreading are eliminated by applying an anti-frictional powder to the surface of the gum which is interposed between the tread of the tire and the repair tread thus permitting the placement of the latter with the least difficulty.

The anti-frictional substance melts at about 280 degrees F. Many metallic gaseous and liquid substances such as sulphur, antimony sulphides, aniline, formaldehyde, etc., are adapted for this purpose. A convenient way of applying them is in the form of fine powder which is dusted on the surface by means of a cloth bag.

The retread is then adjusted without difficulty and the assembled tire and repair subjected to a vulcanizing process.—William E. Shawger, assignor to George W. Eno Rubber Co., both of Los Angeles, California. United States patent No. 1,409,408.

Other Machinery Patents

The United States

1,411,310 Mold for vulcanized rubber airplane propellers. M. C. St. John, Chicago, Ill.

1,411,330 Apparatus and method for manufacturing sheets of plastic and fibrous material. J. P. Elliott, Chicago, Ill.; M. B. Elliott executrix of said J. P. Elliott, deceased.

1,411,424 Apparatus for introducing dry powder into a tire with the air. E. R. Draver, Richmond, Ind.

1,411,588 Pneumatic-tire machine. F. A. Schultz, Hasbrouck Heights, N. J.

1,411,593 Mechanism and process for continuously solidifying and vulcanizing coating compounds. L. A. Subers, Lakewood, O.

1,411,658 Repair vulcanizer. H. M. Fuller, assignor of ½ to T. G. Politz—both of Salt Lake City, Utah.

1,411,672 Apparatus and method for making tires. F. J. Schrank, assignor to The Swinehart Tire & Rubber Co.—both of Akron, O. (Original application divided.)

1,411,706 Apparatus and method for continuous vulcanizing. G. W. Bulley, St. Joseph, Mich.

1,411,907 Scraper. H. Brunner, assignor to Essex Rubber Co.—both of Trenton, N. J.

1,412,119. Tire vulcanizer press. H. P. L. Laussucq, Reading, assignor to Birdsboro Steel Foundry & Machine Co., Birdsboro—both in Pa.

1,412,338 Trimming machine. L. J. Clayton, Bowmanville, assignor to Goodyear Tire & Rubber Co. of Canada, Limited, New Toronto—both in Ont., Can.

1,412,799 Air bag and method of construction. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

1,412,842 Mandrel for tire tubes. D. A. Clark, assignor to The Clyde E. Lowe Co.—both of Cleveland, O.

1,412,951 Pneumatic tire cutting machine. B. E. Maxwell, Wichita, Kans.

1,412,962 Apparatus and process for making vulcanized battery jars. J. E Perrault, Watertown, and C. H. Roper, Belmont, assignors to Hood Rubber Co., Watertown—both in Mass.

1,413,533. Vulcanizing tool. J. P. Holden, assignor to Reliance Curing Core Limited—both of Toronto, Ont.

1,413,707 Device for laying and indenting rubber foxing. W. G. Cheney, Marlboro, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J.

1,413,776 Tire wrapping machine. G. W. Prouty, Milton, Mass.

1,413,786 Cord fabric impregnating apparatus. I. W. Robertson, assignor to The Miller Rubber Co.—both of Akron, O.

1,414,090 Airbag. J. Merz, assignor to Perpetual Air Bag Co.—both of Chicago, Ill.

1,414,091 Airbag. J. Merz, Chicago, Ill.

1,414,445 Vulcanizing attachment for internal-combustion engines. J. M. Stucker and W. J. Kamerer, Rosedale, Kans.

1,414,507 Tire vulcanizing press. J. B. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

The Dominion of Canada

Granted April 4, 1922

217,510 Chuck for tire making machines. Firestone Tire & Rubber Co., assignee of E. D. Putt—both in Akron, Ohio, U. S. A.

217,511 Rubber extruding apparatus. Firestone Tire & Rubber Co., assignee of L. R. McGuire—both of Akron, Ohio, U. S. A.

217,530 Vulcanizing apparatus for tube-end splicing, and process. The Pneumatic Tube Steam Splicer Co., assignee of E. Fetter—both of Baltimore, Md., U. S. A.

The United Kingdom

175,036 Vulcanizer electrically heated. W. H. Welch, 182 Ashley Down Road, Bishopston, Bristol, and H. Frost & Co., Limited, 148 Great Portland street, London.

175,061 Vulcanizer electrically heated. W. Frost and H. Frost & Co., Limited, 150 Great Portland street, London.

175,067 Device for applying bead cores to a partially-built tire foundation. Dunlop Rubber Co., Limited, 1 Albany street, Regent's Park, London, and C. Macbeth and F. Fellowes, Fort Dunlop, Erdington, Birmingham.

175,149 Tire press. Dunlop Rubber Co., Limited, Dunlop House, Albany street, Regent's Park, London; Dunlop Tire & Rubber Goods Co., Limited, 244 Booth avenue, Toronto, Canada.

175,309 Tire core. G. H. Wheatley, 1346 Rawson street, Chicago, Ill., U. S. A.

175,383 Tire mold. A. E. White, 88 Chancery Lane, London; The B. F. Goodrich Co., 1780 Broadway, New York, U. S. A.

175,484 Cylindrical mandrel for joining inner-tube ends. Werneth Rubber Works, Limited, 30 Union street, and C. H. Saunders, 84 Belvidere Road, both in Burton-on-Trent.

175,661 Apparatus for grinding hard rubber rods and tubes. L. R. Heim, 20 Maple avenue, Danbury, Conn., U. S. A. (Not yet accepted.)

175,721 Tire vulcanizing press having series of independent molds. S. Hill-Wood, 11 Great Stanhope street, and W. T. Clifford-Earp, Marjoriebank, Laurel Road, Barnes—both in London.

175,754 Special apparatus for making tires. Dunlop Rubber Co., Limited, 1 Albany street, Regent's Park, London, and C. Macbeth, Fort Dunlop, Erdington, Birmingham.

Germany

Design Patents Issued, with Dates of Issue

809,939 (February 25, 1922) Defect searcher for rubber inner tubes. facture of rubber tires. The Dunlop Rubber Company Limited, London; represented by R. H. Korn, Berlin, S. W. 11.

809,939 (February 25, 1922) Defect searcher for rubber inner tubes. Franz Ade, Rehme, near Bad Oeynhausen, and Willy Finke, Dehme.

810,314 (March 2, 1922) Repair case for tubes and covers. Dr. W. Schmidt, Simbach-am-Inn.

810,556 (March 6, 1922) Tube connection socket. Orientes Handelsgesellschaft m. b. H., Bremen.

811,253 (June 28, 1920). Machine for placing rubber tires in vulcanizing molds. The Dunlop Rubber Co., Limited, London, represented by R. H. Korn, Berlin, S. W. 11.

812,077 (January 13, 1922). Contrivance for attaching rubber heels. Alois Pohl, Siegen, Westphalia.

812,387 (March 18, 1922). Hand vulcanizing apparatus. Erich Klinkmüller, Staaken, near Berlin.

Process Patents

The United States

1,412,309 Manufacture of stretchless belting. H. M. Lambert, assignor to Lambert Tire & Rubber Co.—both of Portland, Ore.

1,412,310 Manufacture of flat endless belts. H. M. Lambert, assignor to Lambert Tire & Rubber Co.—both of Portland, Ore.

1,412,326 Preparing bases for rubber tires and other purposes. W. E. Williams, Chicago, Ill.

1,413,331 Manufacture of carrier rings for solid rubber tires. M. Hering, Ronneburg, Sachsen-Altenburg, Germany.

1,413,663 Manufacture of vulcanized rubber mats. W. J. Kent, Brooklyn, N. Y., assignor to The Mechanical Rubber Co., a New Jersey corporation.

1,414,326 Manufacture of battery jars. S. H. Heist, Penullyn, assignor to Penn Rubber Products Corporation, Philadelphia—both in Pennsylvania.

The Dominion of Canada

217,829 Manufacture of rubber footwear. Hood Rubber Co., assignee of A. A. Glidden, Watertown; T. E. Lafayette, Wellesley; and J. J. Caugham, Cambridge—all in Mass., U. S. A.

217,872 Manufacture of rubber sponge. G. W. Beldam, Ealing, and A. U. B. Ryall, Brantford, both in Middlesex, Eng., co-inventors.

The United Kingdom

175,431 Repairing tires. F. W. Farr, trading as Hercules Tyre Co., Reclaim Works, Henry street, Northampton.

Germany

Patents Issued, with Dates of Issue

353,108 (September 23, 1919). Method of making solid tires. James Caldwell Anderson, Washington, United States; represented by: Nütten, Aachen.

Design Patents Issued, with Dates of Issue

811,523 (March 6, 1922). Method of attaching rubber heels. Peter Niebes, Fleinerstrasse 23, Heilbronn-on-Neckar.

351,368 (February 17, 1921) Manufacture of pneumatic tubes with interior filling. Peter Becker, Viktoriastrasse 25, Cologne.

"DEFIANCE DOPE" FOR FABRICS

"Defiance Dope" is a preparation containing pure rubber as one of its ingredients. The rubber gives it body, extreme flexibility, and adhesiveness, so that it will not leak through the coarsest canvas, will not crack, and is waterproof, weatherproof, and substantially acidproof. The preparation is intended for applying like paint to upholstery coverings, linoleums, automobile tops, hand bags, etc., and dries within an hour after application. It is furnished in all the leading colors, both in bulk and in small containers for domestic use.—Defiance Paint Products Co., Inc., 110 West 42nd street, New York, N. Y.

Activities of The Rubber Association of America

Tire Executive Committee

A SPECIAL meeting of the Tire Executive Committee was held at the Yale Club on Wednesday, May 3, to consider particularly the subject of reduced wheel diameters for pneumatic truck tires and the minimum overall dimensions for pneumatic cord tires. The May regular meeting of the Tire Executive Committee was held on May 17 and a considerable number of routine matters were given attention at that time.

Registration of Trade Terms in Foreign Countries

On Friday, May 5, a subcommittee appointed by the Board of Directors met to discuss the advisability of action by the association in registering in foreign countries some of the generic trade terms commonly in use in the United States, as, for instance, "Cord," in connection with tires. Action in this direction appears to be desirable because of the possibility of embarrassment to American manufacturers if such a generic trade term should be registered by some one who would refuse permission to an American manufacturer to use it. The committee is developing a plan to handle this matter from the standpoint of the interest of all branches of the rubber industry.

Foreign Trade Division

The May meeting of the Foreign Trade Division was held at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, on May 9, for the convenience of many members of that division who were attending the annual convention of the National Foreign Trade Council. The June regular meeting of this division is planned for June 7, at Boston, when a joint dinner and conference will be held with the Boston Export Round Table at the Boston City Club.

Board of Directors

The Board of Directors met for its May regular meeting at the Lotos Club on Thursday, May 18, and matters only of a routine nature were given attention.

Sundries Division

The Executive Committee of the Rubber Sundries Manufacturers Division held at the Union League Club on the evening of Tuesday, May 23, its regular meeting, which was well attended and during which several matters in the process of development were given attention.

Mechanical Goods Specification Committee

A joint conference was held by the Mechanical Goods Specification Committee and a technical committee representing the government at the Bureau of Standards in Washington on May 15. Very gratifying progress was made in the detail preparation of specifications for several lines of mechanical rubber goods in which the various governmental departments are interested.

Conference of Rubber Heel Manufacturers at Washington, D. C., on June 7

The association has issued a call for a meeting of manufacturers of rubber heels (to which are invited both members and non-members of The Rubber Association), for the purpose of discussing the formation of a rubber heel manufacturers' division of that organization and the possible activities of such a body. The meeting, beginning with dinner, will be held at The Raleigh on the evening of June 7, for the reason that the Bureau of Standards is to hold a conference with rubber heel manufacturers during that day on the subject of standardization of sizes and types of heels. The association invitation to its meeting was sent to approximately ninety companies who are believed to be manufacturing rubber heels, but the list is not known to be complete and it is emphasized that the conference is open to all rubber heel manufacturers.

May Meeting of the Traffic Committee

The May regular meeting of the Traffic Committee was held on May 23, in the Yale Club. This meeting was more largely attended than any that has been held in several months. A docket containing a large number of subjects was disposed of.

Traffic Committee Applies for Reduction in Rates on Crude Rubber

The Traffic Committee has filed an application with the Carrier's Freight Classification Committee, asking for a reduction in the rates on crude rubber in carloads from fourth class to fifth class.

An application of the committee filed about a year ago was declined by the carriers at that time, and the Traffic Committee is representing this subject to the Classification Committee in a

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires, Etc.

	Pneumatic Casings				Inner Tubes				Solid Tires			
Month	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
April, 1921	49	4,527,445	1,651,418	1,785,951	51	4,916,772	1,762,122	1,983,571	12	269,985	28,859	42,080
May, 1921	59	4,451,668	2,100,917	2,085,882	57	4,751,880	2,210,040	2,342,567	12	264,663	35,156	40,122
June, 1921	63	4,154,456	2,313,265	2,643,850	60	3,835,098	2,359,928	3,232,673	11	240,336	28,395	49,867
July, 1921	63	3,892,037	2,570,524	2,757,581	61	3,122,815	3,020,981	3,603,248	11	220,003	35,123	55,678
August, 1921	66	3,934,853	3,043,187	2,894,442	64	3,649,319	4,430,152	3,804,060	11	216,367	55,694	66,866
September, 1921	63	3,340,798	1,929,268	2,047,929	62	3,827,830	3,274,822	2,645,758	11	161,832	37,441	50,276
October, 1921	64	3,545,030	1,928,271	1,675,169	64	4,732,016	2,843,918	2,016,371	10	163,299	46,274	45,911
November, 1921	64	3,908,342	1,756,555	1,342,519	63	5,203,568	2,126,211	1,540,299	10	173,451	43,537	34,556
December, 1921	64	3,696,519	1,839,738	1,980,264	64	4,731,021	2,070,098	2,522,710	10	168,515	40,478	39,520
January, 1922	66	4,174,216	2,055,134	1,596,806	66	5,246,647	2,343,393	1,889,724	11	181,769	40,224	33,294
February, 1922	66	4,691,329	2,084,308	1,562,365	65	6,141,956	2,596,774	1,702,583	11	183,448	39,492	36,805
March, 1922	63	5,183,286	2,645,790	2,073,963	63	6,991,118	3,017,511	2,090,737	11	182,197	49,433	48,350

Compiled by The Rubber Association of America, Inc.

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse branch, or on a consignment basis, or abroad.

further attempt to secure the establishment of lower rates on crude rubber shipments.

Cooperation Between Members of the Traffic Committee on Questions of Export Traffic

Questions affecting rates and transportation of freight in domestic traffic for the association are handled by the Traffic Committee through cooperation between the members, but it has not dealt, to any extent, with questions affecting export traffic.

With the thought that the industry as a whole may be benefited by the cooperative effort of the Traffic Committee, it was decided at a recent meeting that questions relating to export traffic, particularly ocean rates, should receive the attention of the Traffic Committee to the same extent as do questions affecting domestic traffic. Rubber goods exported in 1921 totaled thirty-one millions.

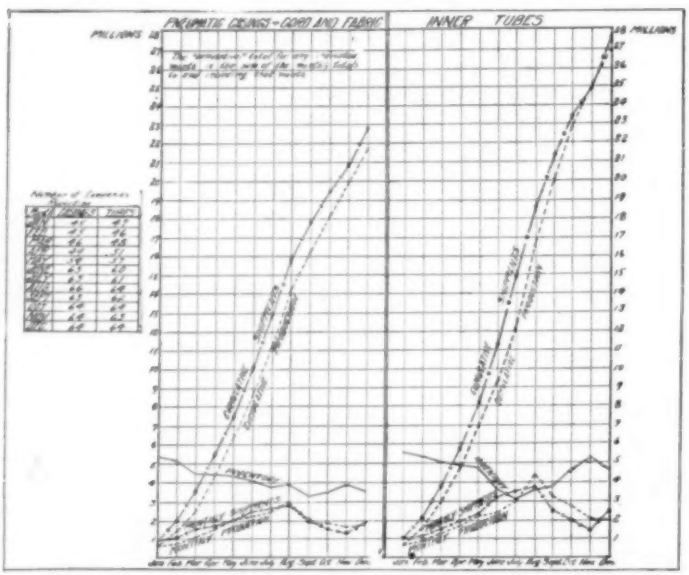
Rates on Tires to Pacific Coast Points Via the Panama Canal

The Traffic Committee is engaged in negotiations with the steamship lines operating from the Atlantic to the Pacific Coast via the Panama Canal whereby a reduction in the rates on pneumatic and solid tires may be secured.

The negotiations are still in tentative shape and it is not possible to advise of definite rates that may be established, but the membership of the association will be furnished with definite information in connection with this matter, as soon as the negotiations are completed.

Chart and Figures Showing Domestic Inventory, Production, and Shipments of Pneumatic Cord and Fabric Tire Casings and Inner Tubes During the Calendar Year 1921

The accompanying chart offers a graphic comparison of the figures covering monthly and cumulative domestic production and shipments of pneumatic tire casings and inner tubes during the calendar year 1921. This chart and the accompanying tables were prepared by the Tire Manufacturers' Division of The Rubber Association of America, Inc., based on figures submitted by tire and tube manufacturers, as indicated in the small square at the left. In December the number of manufacturers making returns was more than 1.42 times greater on casings and 1.36 times greater on tubes than in January.



From the figures in the tables below it will be seen that the number of pneumatic tire casings produced in the month of December, 1921, was more than 2.61 times as many as were produced in January of the same year. At the same time the number of shipments was only slightly more than 2.51 times as great in December as in January.

The number of inner tubes produced during the month of December, 1921, was 2.79 times the number produced during January of the same year, while the number of shipments was only a little more than 2.4 times as many in December as in January.

Pneumatic Casings

		January	February	March	April	May	June	July	August	September	October	November	December
Inventory		5,319,605	5,193,018	4,597,103	4,527,445	4,451,668	4,154,456	3,892,037	3,934,583	3,340,798	3,545,030	3,908,342	3,696,519
Production	Cumulative	.....	1,523,322	2,686,636	4,338,054	6,438,971	8,752,236	11,322,760	14,365,947	16,295,215	18,223,486	19,980,041	21,819,779
	Monthly...	703,430	819,892	1,163,314	1,651,418	2,100,917	2,313,265	2,570,524	3,043,187	1,929,268	1,928,271	1,756,555	1,839,738
Shipments	Cumulative	.....	2,039,173	3,653,824	5,439,775	7,525,657	10,169,507	12,927,088	15,821,530	17,869,459	19,544,628	20,887,147	33,867,411
	Monthly...	965,417	1,073,756	1,654,651	1,785,951	2,085,882	2,643,850	2,757,581	2,894,442	2,047,929	1,675,169	1,342,519	1,980,264

Inner Tubes

		January	February	March	April	May	June	July	August	September	October	November	December
Inventory		5,586,163	5,415,464	5,044,861	4,916,772	4,751,880	3,835,098	3,122,815	3,649,319	3,827,830	4,732,016	5,203,568	4,731,021
Production	Cumulative	.....	1,657,451	3,003,934	4,766,056	6,976,096	9,336,024	12,357,005	16,787,157	20,061,979	22,905,897	25,032,108	27,102,206
	Monthly...	740,824	916,627	1,346,483	1,762,122	2,210,040	2,359,928	3,020,981	4,430,152	3,274,822	2,843,918	2,126,211	2,070,098
Shipments	Cumulative	.....	2,172,498	3,816,188	5,799,759	8,142,326	11,374,999	14,978,247	18,782,307	21,428,065	23,444,436	24,984,735	27,507,445
	Monthly...	1,042,617	1,129,881	1,643,690	1,983,571	2,342,567	3,232,673	3,603,248	3,804,060	2,645,758	2,016,371	1,540,299	2,522,710

"FLAMMABLE" AND "NON-FLAMMABLE"?

The National Safety Council, following the recommendation of the National Fire Protection Association and others, prefers to use the word "inflammable" with variations. According to these authorities, there is much confusion with regard to the definition of this word, arising from the fact that in other words the prefix "in" means "not." For this reason these organizations advise substituting the word "flammable" for materials that burn readily, and "non-flammable" to indicate the opposite characteristic.

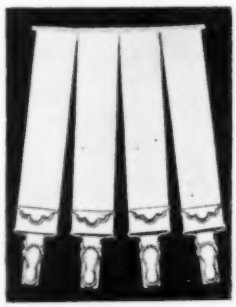
FOREIGN TRADE WORK ENLARGED BY COMMERCE DEPARTMENT

According to a plan formulated by Secretary Hoover, there will be a marked expansion of the foreign trade activities of the Department of Commerce during the coming fiscal year beginning July 1. Of interest to the rubber industry is the announcement that P. L. Palmerton, chief of the rubber division of the department, will soon begin, in Europe, the first special rubber goods market investigation ever undertaken by our government.

New Goods and Specialties

Oblong Rubber Clasps on Garters That Sew On

FOR the notion trade there are now to be had the "Velvet Grip 'Sew-Ons,'" elastic garters with oblong rubber button clasps, in sets of four, stitched together at the top, for attaching to corsets, girdles, etc., by cutting apart as desired.—George Frost Co., 551 Tremont street, Boston, Massachusetts.



"Velvet Grip 'Sew-Ons'"

"Las-Stik" for Blowouts

"Las-Stik," tube patching material of pure white Pará rubber, with an under layer of uncured pure gum, is trade-marked on every inch, requires no gasoline, and comes packed in cans.—Las-Stik Patch Manufacturing Co., Hamilton, Ohio.

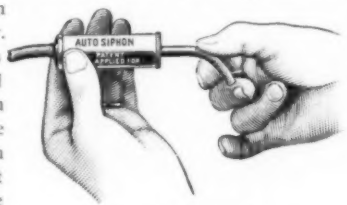
Balanced Golf Ball Meridian Marked

An easily identified golf ball is the "Macgregor Master," for which is claimed perfect balance to insure true running. The ball is made by a special patented process and has been thoroughly tested. The same company puts out many other golf balls.—The Crawford, McGregor & Canby Co., Dayton, Ohio.

"Macgregor Master"

Syphon for Gasoline

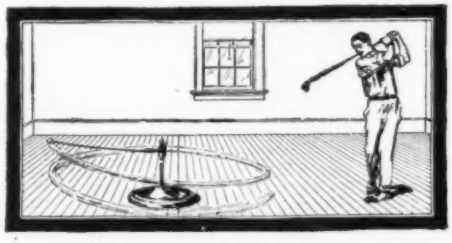
Dealers will appreciate the "Auto Syphon" for easily and safely transferring gasoline from one receptacle to another. Each "Auto Syphon" has all parts of nickel plated brass and is packed with 30 inches of gasoline hose in a carton.—American Gas Machine Co., Albert Lea, Minnesota; 78 Reade street, New York, N. Y.



"Auto Syphon"

Golf Machine Shows Yardage

A golf machine for practice in any space 11 by 12 feet or more, and one that is portable and does not have to be screwed down, will interest dealers in golf and sporting goods. A solid rubber ball is used, attached to the end of a horizontal steel spring wire, in turn fastened to an upright bolt threaded with flat-faced coarse threads. The ball revolving around the bolt indicates the yardage of each hit. The entire outfit weighs 36 pounds.—Burn-Boston Battery & Manufacturing Works, Little Building, Boston, Mass.



"Burn-Boston" Golf Machine

Air Valve Lock for Tire Valves

The "Trex" air valve lock is made entirely of metal and is intended to be inserted inside an ordinary valve stem in place of the usual inside parts. It is claimed for this lock that it eliminates the necessity of repumping tires after they are once inflated, and no dust cap is required. Dealers in accessories who are familiar with the "Trex" tire tool will welcome this addition to the Trex line.—The Trexler Co., Philadelphia, Pennsylvania.

"Trex" Air Valve Lock

Strengthening Plasters Contain Rubber

Strengthening plasters, one well known brand of which carries the trade mark "B & B," contain about one-third part rubber to provide the necessary adhesion to hold the plasters in place on wrists, ankles, etc., for which purpose athletes utilize these pliable supports.—Bauer & Black, 2500 South Dearborn street, Chicago, Illinois.

Rubber Heel for Weak Arches

A new patented rubber heel, "Pietzuch's Wonder Arch Guide," is a decided novelty. Each heel is practically two side-by-side half heels, one of very resilient and the other of very much firmer stock, vulcanized together. The heels are made in rights and lefts in regular sizes, the section on the inside of the foot being one-third less yieldable than the outside portion. The more resilient half marked 75 per cent. is a distinct black, and the less cushioned, marked 25 per cent. gray. The heel is slightly concave on its upper side and has five nail-holes. It is made by the West American Rubber Co., Los Angeles, California, for the inventor, Joseph Pietzuch, 430 Race street, Cincinnati, Ohio.

Rubber Bibs With Sleeves

The dealer in infants' rubber specialties will be interested in the development of the rubber bib. Two models are shown here, each of which has sleeves. The one in the larger picture ties around the neck only, has sleeves cut in one piece with the bib, and is bound around the edges. The sleeves are gathered at the wrist. The garment is of white, pale-blue, or flesh-colored rubber.—I. B. Kleinert Rubber Co., 719 Broadway, New York, N. Y.

Kleinert Bib

"Tidy-Bib"

The other illustration shows what is known as the "Tidy-Bib," a model that is different in shape but which also ties around the neck. This bib is made in both white and flesh-colored rubber, bound with pink or blue binding, and the wrists are shirred to a piece of pure rubber of the correct size to fit closely without binding around the infant's wrists.—The Sanitary Rubber Novelty Co., 331 West Ohio street, Chicago, Illinois.

New Brands Added to Culp Tire Line

Two of the cord tires recently added to the Culp line are illustrated here. Made in a new model factory, they are being offered to dealers at a special low price. Heavy, oversize, red tubes for these tires are also being manufactured in the same factory.

"Culp-Cord" "Vacuum Cord"

The "Culp-Cord" and "Vacuum Cord" are heavy, oversize, overweight tires of extra ply construction the same in both. Only the black tread is different; the sidewalls are cream. Cross-section samples furnished dealers permit examination of construction.

Both the "Culp-Cord" and the "Vacuum Cord" are made in 15 sizes from 30 by 3 to 37 by 5 for automobiles, and in both straightside and clincher type in 30 by 3½. The "Culp-Cord" is also made in four truck sizes from 34 by 5 to 40 by 8, and the "Vacuum Cord" in 34 by 5 for trucks.—George K. Culp, Inc., 56 West 45th street, New York.

Rubber Tired Coaster

The dealer in items for juvenile trade, especially those who stock juvenile vehicles, will be glad to know about the rubber-tired coaster wagon shown here. The tires are the non-skid cushion type, fitted to roller-bearing steel wheels, and increase both the comfort and speed in riding.—The American National Co., Toledo, Ohio.

Rubber-Tired Coaster

"Gym Bal" Shoe for Hiking and Camping

"Top Notch 'Gym Bal'"

Dealers in sport footwear who desire a quality shoe for vacationists, particularly for those going hiking and camping, will appreciate the sturdy dependableness of the "Gym Bal" shoe with the well known "Top Notch" cross trade-mark forming a part of the non-skid sole design. The upper of this shoe is a fine grade of tough white or brown duck, with stitched-on leather trimmings. The sole is dark red and the black rubber toe cap and black leather ankle patch are features in its reinforcement. There is also a tough strip of leather at the edge of the sole where much strain comes. The "Gym Bal" shoe is fitted with a "Kendex" innersole and offers a thoroughly comfortable, good looking, and serviceable shoe for summer wear. It is also economical from the point of view that high grade materials always give the best service.—Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut.

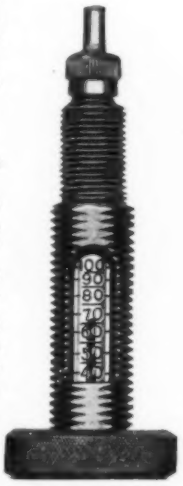
Faucet Device Lightens Washing

A little device to facilitate the filling or draining of washing machines, etc., attaches to a faucet at A. A piece of garden hose from the washer is connected to the extension B. For emptying, the water is turned on at the faucet and the suction draws the waste water through the hose. For filling a plug is inserted at C, when water from the faucet will flow back through the hose to the washer.—Penberthy Injector Co., Detroit, Michigan; 71 Beekman street, New York, N. Y.

Penberthy Drainer

Tire Valve Has Visible Register

A tire valve standard in every way includes a pressure registering device enclosed in chamber unaffected by outside forces, guaranteeing accuracy. The pocket gage is thus eliminated and the "Registire" calibration is always visible. Inner tubes equipped with this device are of laminated construction, built of live rubber, and are also called "Registire."—Registire Company, Incorporated, 1733 Broadway, New York, N. Y.



"Registire" Valve

"Duofold" Pen Has "Lucky Curve"

The manufacturer of the fountain pen with the famous "Lucky Curve" has recently put on the market the "Duofold" oversize self-filling fountain pen, which has a barrel of Chinese-red rubber, made by the American Hard Rubber Co., New York, N. Y. The top of the cap and the ends of the barrel containing the button filler and pen are of black rubber. The "Duofold" pen is made in three sizes, including "Lady Duofold" for ladies' chatelaines or hand bags.—The Parker Pen Co., Janesville, Wisconsin.

Gingham Corsets

New corsets have elastic tops and are American made of imported checked gingham in lavender and white or pink and white.—Birdsey Somers Co., 11 East 42d street, New York, N. Y.

Ladies' "Plymouth" Bag

Leatherette Bag

The "Plymouth" bag is large and roomy, fastens with a strap snapped down on one side, and has double strap handles. Made of black leatherette containing rubber in its surfacing, and lined with flowered cretonne, this bag is waterproof and suitable for carrying bathing suits or for shopping.—Commercial Bag Co., 223 Commercial street, Boston, Massachusetts.

Rolled Top Hosiery with Elastic Insert

A manufacturer with an eye to the trend of style and the demands of the summer season has brought out a stocking with a rolled top which reaches just below the knee. Elastic webbing is inserted in this top and the whole finished plain or with a silk ruffle. These stockings, called the "Rolette," are to be had in both thread and Italian silk in plain and fancy weaves or a fine mesh, and in colors suitable for street wear as well as in combinations to harmonize with bathing suits. "Rolettes" may also be obtained in regular stocking length.—Julius Kayser & Co., 353 Fourth avenue, New York, N. Y.

The "Rolette"

Golf Ball Wound by Improved Method

The manufacturer of the "Corona" golf ball claims a special improved method of winding the core that increases its carrying powers and durability. A high quality of paint is also used on the surface and the ball is standard in weight and size. This manufacturer also offers a number of other trade marked golf balls, all at wholesale only.—Holmac, Incorporated, 25 West 45th street, New York, N. Y.

"Corona" Golf Ball

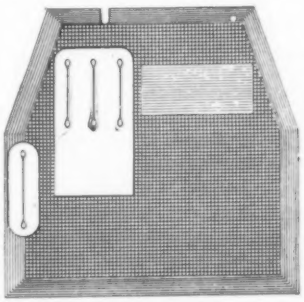
Bag for Bathing Suits

Dealers in bathers' novelties should find the "Asbury" bathing suit bag a ready seller. It is made of hand woven imported sea grass, lined with rubberized material, and closes with snap buttons. There is a strap handle for carrying and the bag is suitable for use by both men and women. It will pack a full size bathing suit and the usual accessories.—Asbury Mills, 295 Fifth avenue, New York, N. Y.

"Asbury" Bag

Pedal Mat for Ford Touring Car or Roadster

Dealers in accessories for Ford automobiles will be glad to know about the red rubber slit mat illustrated here, intended to cover the holes where brake and pedal levers come through the floor of the car and keep out the cold. This mat can also be had in jet black.—The Vul-Tex Co., Barberton, Ohio; 212 Fifth avenue, New York, N. Y.



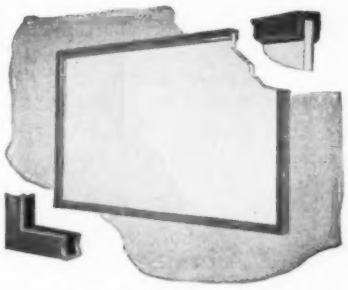
Slit Mat for Fords

Molded Bathing Cap

A molded bathing cap to be had in all colors is "Samstag's Colonial Quality," with imitation corded seam over the top of the head where the edges of the mold come together.

The words "Front" and "Back" are molded in the border and the outer surface is decorated with a dainty pattern of conventionalized flowers. To the ear tabs is attached a rubber chin strap with nickeled buckles on the ends, concealing the snap button fasteners.—Samstag & Hilder Bros., 1200 Broadway, New York, New York.

Rubber Set Glass



Auto Glass in Rubber Channel

To minimize vibration and rattling a high grade automobile has the windows set in one-piece molded rubber channeling. Movable glass slides in felt channels against rubber seals. The doors, also, fit perfectly over upholstered rubber.—Raulang Body Division, The Baker R & L Co., 2180 West 25th street, Cleveland, Ohio.

Rubber Lined Barrel for Shipping Chemicals

For shipping chemicals with a minimum of leakage, a rubber lining for barrels has been devised. Referring to the drawing reproduced, a corrugated paper bag (*A*) is inserted in a heavy oak barrel. A pure sheet rubber cylinder (*B*), into which is vulcanized a neck (*C*), is inserted in the barrel. The rubber head (*D*) is cemented to the cylindrical case (*A*) at the time the barrel is coopered, and a molded rubber bung cap (*E*) is applied after the barrel has been filled, held in place by a wedged-shaped bung-plate (*F*) screwed to the barrel. A "Lastik" barrel containing 50 gallons weighs but little more than the 12-gallon carboy formerly used.—American Chemical Paint Co., 1118 South 11th street, Philadelphia, Pennsylvania.

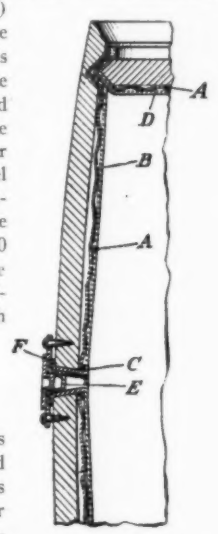


Diagram of "Lastik" Barrel Lining

"Radion" for Radio Parts

For the radio instrument trade there has been introduced a special quality of hard rubber in brown, black and grained effects for panels. This material is known under the trade mark "Radion" and is not excelled in mechanical, electrical, or machining qualities.—The American Hard Rubber Co., 11 Mercer street, New York, N. Y.

The Poppy Golf Ball

A golf ball that is not only attractive, but which experts assert is one of the finest made, is a new one bearing a yellow flower trade mark, "The California Poppy," patented by James Oviatt and manufactured in England. It is the result of two years' experimenting to get a ball giving maximum flight, remarkable steadiness on the putting green, and utmost durability. The rubber core is fashioned skilfully of the best material, and the gutta percha covering is specially prepared to resist cutting. The paint has an exceptional non-flaking quality, allowing the ball to stand an extraordinary amount of hard hitting.—Alexander & Oviatt, Inc., 605 South Hill street, Los Angeles, California.

"California Poppy" Golf Ball

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(989) Request is made for the address of a manufacturer of condensite or some other substitute for rubber used for making telephone receivers.

(990) A manufacturer desires the addresses of makers of felt used to cover tennis balls.

(991) A British concern desires to purchase fountain pen ink sacs in 100-gross lots.

(992) Formulas and compounds for radio material are desired.

(994) Addresses of English manufacturers of light weight macintosh waders are desired.

(993) Inquiry is made as to sources from which silk flock may be obtained.

(995) Information is requested as to sources for purchasing latex in large quantities.

(996) The address of the manufacturer of the "Unitach" rubber faucet connection is desired.

(997) Addresses of manufacturers of hard rubber dust are requested.

(998) A British manufacturer inquires for the addresses of concerns making molds and dipping machines for toy balloons.

(999) Inquiry is made for addresses of manufacturers of 40-inch sheeting, 56 by 60, 3.60.

(1000) A manufacturer requests the address of a concern making ink for printing permanently on toy balloons.

Trade Opportunities from Consular Reports

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from the following districts or cooperative offices. Requests for each address should be on a separate sheet and state number.

DISTRICT OFFICES	COOPERATIVE OFFICES
New York: 734 Customhouse.	Cleveland: Chamber of Commerce.
Boston: 1801 Customhouse.	Cincinnati: Chamber of Commerce: General Freight Agent Southern Railway, 96 Ingalls Building.
Chicago: 504 Federal Building.	Dayton, Ohio: Dayton Chamber of Commerce.
St. Louis: 402 Third National Bank Building.	Los Angeles: Chamber of Commerce.
New Orleans: 1020 Hibernia Bank Building.	Philadelphia: Chamber of Commerce.
San Francisco: 307 Customhouse.	Portland, Oregon: Chamber of Commerce.
Seattle: 848 Henry Building.	

(1501) Mercantile company in Ireland desires agency for electrical goods, packing, belting, belting laces and clips, sanitary supplies, and motor accessories.

(1511) Mercantile firm in Ireland desires agency for rubber shoes. Quote c. i. f. Belfast and Dublin.

(1518) Merchant in England desires to purchase an agency for novelties for household and general use, also hot-water bottles. Quote c. i. f. Liverpool or London. Cash.

(1533) There is a market in Italy for industrial chemicals, oils, paraffine, etc. Quote c. i. f. Italian port.

(1641) Manufacturing firm in England wishes to purchase materials used in the manufacture of rubber stamps, etc. Quote c. i. f. Liverpool, or f. o. b. New York. Cash.

(1648) Salvage company in Spain desires to purchase diving equipment, including air hose, tubing, and other supplies for maritime salvage operations. Quote c. i. f. Spanish port. Payment in New York against documents.

(1650) Merchant in Norway desires to secure agency for rubber and canvas hose. Quote c. i. f. Norwegian port. Payment through banks in Norway and New York.

(1666) Mercantile firm in Burma, India, desires to purchase belting, and high pressure steam packing. Quote c. i. f. port of India. Cash against documents.

(1667) Firm in Spain desires to purchase or secure agency for sale of fountain pens, office supplies, rubber erasers, etc. Quote c. i. f. Spanish port, in Spanish.

(1762) Mercantile firm in England desires to purchase rubber surgical goods and sundries. Cash. Quote c. i. f. Liverpool with catalogs and price lists.

(1765) Mercantile firm in Italy desires to purchase sporting goods, including tennis balls, footballs, and other open air games. Payment through bank on receipt of goods. Correspond in Italian.

(1822) Merchant in Greece desires to communicate with manufacturers of rubber sheeting.

(1823) Firm of commission brokers in Italy desires agency for sale of office supplies in general, rubber goods, and rubber substitutes for industrial purposes.

(1833-1837) Several foreign trade opportunities pertaining to rubber goods have been grouped under these numbers.

(1845) Importing firm in Norway desires to communicate with dealers in all kinds of machinery (excepting agricultural), accessories and raw products for various industries, and chemical products of all kinds. Quote c. i. f. Norwegian port.

(1865) Mercantile firm in Sweden desires to purchase asbestos goods, packings and beltings. Quote f. o. b. American ports or c. i. f. Swedish ports. Cash against documents or upon receipt of goods.

(2025) Commercial agent in Austria wishes to secure agency to purchase rubber shoes and galoshes.

(2097) Inquiry has been received from a firm in Chile for the purchase of "pogo" (jumping) sticks. Quote f. o. b. American port.

Trade Lists Available

Under the following numbers, revised trade lists have been compiled by the Commercial Intelligence Bureau of the Bureau of Foreign and Domestic Commerce. These supersede the previous ones and mimeographed copies may be had on application to any of the offices of the Bureau, mentioning reference number.

EUR-1014-A, Belgium, importers and dealers in motor cars, trucks, tires, and accessories.

EUR-9012-A, Norway, importers and dealers in rubber goods.

SYNDICATE BUYS PLANT OF KELLEY TIRE & RUBBER CO.

The plant of the Kelley Tire & Rubber Co., at West Haven, Connecticut, has been recently purchased by a syndicate of business men, headed by George F. Armstrong, president and treasurer of the Armstrong Rubber Co., Garfield, New Jersey.

Officers of the new company, of which the name has not yet been announced, are as follows: George F. Armstrong, president and treasurer; and James A. Walsh, vice-president and secretary; while Arthur S. Egner, M. L. Toms and Robert D. Foote are directors.

Production will begin at once, the West Haven plant having an ultimate daily capacity of 2,000 tires and 5,000 inner tubes.

HENRY P. KRAFT NOW PRESIDENT OF A. SCHRADER'S SON, INC.

Henry P. Kraft, who has been associated with A. Schrader's Son, Inc., Brooklyn, N. Y., for the past 39 years, and has held the position of vice-president and treasurer of the organization, has been recently elected president, following the resignation of Charles Schweinert. For more than 35 years Mr. Schweinert has acted as general manager, treasurer, director and president, and will continue to serve the firm in an advisory capacity. A. Schrader's Son, Inc., established in 1844, is now one of the largest manufacturers of automobile accessories.

News of the American Rubber Trade

Financial

A 40 PER CENT disbursement dividend to creditors of The Portage Rubber Co. was recommended by George D. Bates, trustee, following payments for part of the inventory taken over with the plant by the Seiberling Rubber Co. This is the first dividend disbursement and information is lacking as to what may be expected by creditors in the future. It was estimated unofficially when the company's property was purchased by the Seiberling company that the creditors would get approximately 50 cents on the dollar for their claims.

Officials of the Mohawk Rubber Co. believe that it will be possible to begin preferred dividend payments sometime in July, if present conditions remain or improve. The stockholders have approved changing the present $2,500,000 common stock to $2,000,000 preferred stock and 20,000 shares of no par value common. Each stockholder will be given 80 per cent of his present holding in preferred stock and the remainder in no par common, so that each stockholder will have the same amount of stock as before the conversion except in a different form. The company called in its preferred stock several years ago and has had only common since. Dividends on the common were stopped April 1, 1921.

Canadian Consolidated Rubber Co., Limited

According to the annual report for the year ended December 31, 1921, net sales for the year were $14,593,605, a decrease of $12,081,907 from the sales of 1920, which were the largest in the company's history. Net income before interest was $90,336. Interest charges amounted to $850,850, leaving a net loss of $760,514 before an inventory adjustment in the amount of $964,980. Total inventories were reduced to $8,008,375, being a reduction of $6,084,448, or 43.17 per cent. Financial obligations, including forward commitments, were reduced $6,362,299 to $4,520,086. It is estimated that price reductions made after January 1, 1921, reduced profits approximately $2,300,000. Net loss for the year, inventory adjustment and a dividend on preferred shares amounting to $210,000 reduce the surplus from $8,319,474 to $6,383,980.

Current assets amount to $10,205,102 against current liabilities of $3,147,021. Total assets and liabilities are $28,473,335. The year is regarded as one of readjustment and substantial liquidation and the company faces the future in a strong financial and trade position.

The officers are Charles B. Seger, president; W. A. Eden, vice-president; W. Binmore, secretary and treasurer; J. P. B. Daigneau and J. G. Barrow, assistant treasurers; H. P. Nellis, assistant secretary.

Republic Rubber Corporation

C. H. Booth, receiver of the Republic Rubber Corporation and the Republic Rubber Co., has issued financial reports covering his administration of nine months, as compared with the preceding nine months.

Gross sales for March, 1922, were $478,363.79, the largest month since November, 1920, and resulting in a net profit of $27,221.05, the first earning since the first quarter of 1920.

Up to April 12, 1922, $800,000 of the $1,000,000 certificates of indebtedness authorized in January had been sold at par and the proceeds carrying larger accounts receivable and inventories commensurate with the increasing volume of sales.

The value of plant and equipment at depreciated value is $4,335,417.01 and the net worth is $3,849,833.24.

The gradual reduction of losses, and the profit shown in March, indicate that when reorganized and placed on a proper financial basis, the corporation will regain its former position in the American rubber trade.

Callaway Mills to Sell Own Product

Establishment of its own selling agency, to begin business July 1, and to be known as Callaway Mills, Inc., is announced by the Fuller E. Callaway chain of cotton mills comprising the Unity Cotton Mills, Unity Spinning Mills, Elm City Cotton Mills and Hillside Cotton Mills, of La Grange, Georgia; the Milstead Manufacturing Co., of Milstead; and the Manchester Cotton Mills, Manchester; while in addition the Villa Rica Cotton Mills, of Villa Rica, Georgia, will also be served by the new sales agency. Production at these plants includes hose and belting ducks, fire hose cords, and artificial leather fabrics.

Harris & Ewing
Fuller E. Callaway

The selling agency of these mills has been carried on for about 20 years by J. H. Lane & Co., Inc. The separation, it is stated, is pleasant and by mutual agreement, having been brought about chiefly through a desire of some of the older heads of J. H. Lane & Co. to relieve themselves of a part of their active duties and responsibilities.

The New York City offices of Callaway Mills, Inc., will be on the tenth floor of the building at 345 Madison avenue, while other offices will be maintained in Chicago, Boston, and elsewhere. Executives of the new organization include: Fuller E. Callaway, chairman of the board; Cason J. Callaway, president; Ely R. Callaway, vice-president and treasurer, and W. A. Drisler, secretary.

The above, with Harold H. Barnard, Howard L. Marsh and Malcolm Roberts of New York and Hatton Lovejoy of La Grange, Georgia, will compose the board of directors.

GEORGE K. CULP, INC., ACQUIRES ANOTHER PLANT

A factory at West Haven, Connecticut, formerly owned by the Kelley Tire & Rubber Co., and recently purchased by a syndicate headed by George F. Armstrong, president of the Armstrong Rubber Co., Inc., is now associated, under a five-year contract, with the organization known as George K. Culp, Inc. On June 1 the manufacture of tires and tubes began at the West Haven plant, which will be known to the trade as "Culp-Plan Associated Factory No. 10."

FIRESTONE SCHOLARSHIP AWARD

Miss Garland Johnson, Bridgeport, West Virginia, will receive the four years' university scholarship offered by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., for the best essay on the subject "How Good Roads Are Developing My Community." The contest was conducted by the Highway and Highway Transport Education Committee, Washington, D. C., and it is an interesting fact that details concerning the contest were sent out over the country by radio announcement, while high school students of Alaska received information by cable.

New Incorporations

Better Tires Corporation, April 27 (Delaware), $2,000. F. R. Hansell; I. V. Pimm—both of Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Market street, Wilmington, Delaware. To deal in tires, etc.

Bu-Devil Puncture Stop of New York, Inc., May 11 (New York), $4,000. C. Giovinco, 795 Bushwick avenue; S. Brucia, 86 Wilson avenue; J. Tornabe, 715 Hart street—all of Brooklyn, New York. Principal office, Brooklyn, New York. To deal in tires, etc.

Broughton Sales Co., May 16 (Ohio), $25,000. E. W. Broughton; F. A. Palmer; C. E. Schoner; O. E. Wolf; S. A. Affleck. Principal office, 149 East Market street, Akron, Ohio. To deal in tires, tubes, etc.

Brubaker Tire & Rubber Co., April 7 (Ohio), $400,000. W. A. Brubaker; G. A. Elfers; W. E. Snyder. Principal office, Akron, Ohio. To deal in tires.

Cesar Resilient Tire Corporation, May 12 (New York), $200,000. P. Di Cesare, 253 West 12th street; C. Capria, 2957 West 29th street, Coney Island; J. Panagrosso, 449 East 119th street—all of New York City. To manufacture tire attachment.

Champion Rubber Co., May 10 (Ohio), $10,000. W. H. Stillwell; G. W. Coble; O. Wilcox. Principal office, Cuyahoga Falls, Ohio. To manufacture tires and all kinds of rubber products.

Coast Tire Sales Co., March 8 (California), $500,000. G. C. Calden, Flatiron Block, San Francisco, California. Principal office, Los Angeles, California. To do a general accessory and rubber business.

Conservative Tire & Service Co., March 14 (Delaware), $10,000. T. Mackelrnan; O. S. Hammon; T. J. Melvin—all of Bradford, Pennsylvania. Delaware agent, Corporation Service Co., Equitable Building, Wilmington, Delaware. To deal in tires, tubes, etc.

Dexter Rubber Manufacturing Co., Inc., April 21 (New York), $500. E. H. and E. R. Dexter; W. K. P. Bauman—all of Goshen, New York. Principal office, Goshen, Orange County, New York. To manufacture tire flaps, motor accessories, etc.

Dollar Tire Stores, May 19 (Delaware), $150,000. Delaware agent, Corporation Service Co., Equitable Building, Wilmington, Delaware. To deal in tires.

Dupont Leather Goods, Inc., May 2 (Delaware), $50,000. M. Korn, president; R. Korn, clerk, both of Peabody; J. R. McAndrew, treasurer, 359 Geneva avenue, Boston—both in Massachusetts. Principal office, Peabody, Massachusetts. To manufacture and deal in leather, rubberized leather, etc.

Elvers & Rhode, February 27 (Wisconsin), $15,000. H. C. Elvers, president; G. Elvers, vice-president, both of 717 South Dickenson street; A. R. Rhode, secretary and treasurer, 1220 W. Johnson street—both of Madison, Wisconsin. Principal office, Madison, Wisconsin. To deal in tires, etc.

Emergency Vulcanizing Co., February 25 (Maine), $10,000. H. E. Porter, president; L. G. Hall, treasurer; J. D. Maxwell, clerk—all of Bangor, Maine. Principal office, Bangor, Maine. To do vulcanizing.

Estaver Co., William A., February 1 (Florida), $100,000. W. A. Estaver, president; H. R. Estaver, vice-president; G. W. Estaver, secretary. Principal office, Jacksonville, Florida. To deal in tires, etc.

Excel Tire & Rubber Co., May 11 (Ohio), 5,000 shares no par value, $500,000 preferred. F. F. Falk; E. J. Brouse; Z. N. Wallis. Principal office, Wadsworth, Ohio. To manufacture rubber products of all kinds.

Farrell Rubber Manufacturing Co., March 23 (New Jersey), $100,000. T. A., J. L. and A. E. Farrell—all of 42 Paterson avenue, East Rutherford, New Jersey. Principal office, 42 Paterson avenue, East Rutherford, New Jersey. Agent in charge, T. A. Farrell. To buy, sell, trade and deal in all kinds of crude, refined and manufacturing rubber, etc.

Fickel Brothers Tire Co., May 5 (Ohio), 100 shares no par value. Principal office, 1851 Euclid avenue, Cleveland, Ohio. To manufacture tires and rubber goods.

Flexite No-Air Tire Co., May 1 (Delaware), $500,000. T. L. Croteau; M. A. Bruce; C. H. Blaske—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires, and especially the "Flexite No-Air" tires, etc.

Harlem Rubber Co., March 29 (Illinois), $10,000. L. R. and I. A. Netzel, both 3437 North Ridgeway avenue, Chicago; G. C. Siebert, 148 North Humphrey avenue, Oak Park—both in Illinois. Principal office, 1652 North Kostner avenue, Chicago, Illinois. To manufacture and sell rubber products.

Hubble Rubber Co., May 13 (Ohio), 1,000 shares no par value. C. C. Hubbel; G. F. Hammond; C. J. Hoyt. Principal office, Newton Falls, Ohio. To manufacture all kinds of rubber products.

Huntsberry Co., The, April 8 (Ohio), $100,000. H. H. Huntsberry; C. M. Meyers; C. Blattert; G. McLammont. Principal office, Akron, Ohio. To deal in tires etc.

Ideal Elastic & Braid Co., Inc., May 19 (New York), $3,500. B. B. and R. Kasselbranar, both of 449 East 137th street; M. H. Myers, 64 Vermilyea avenue—both of Bronx, New York. To deal in elastic and braids.

Illinois Rubber Co., Inc., March 21 (Illinois), $1,000. J. E. Axtell, 5540 Blackstone avenue; C. A. Winston, 1140 Otis Building, both of Chicago, Illinois; C. L. Runyan, 2111 South Center street, Terre Haute, Indiana. Principal office, 1140 South La Salle street, Chicago, Illinois. To buy, sell, manufacture and deal in tires, etc.

Kerwol Tire Stores Co., Inc., April 28 (Delaware), $20,000. J. C. Wolf, 20 Pine street; H. J. Kernes, Bishop street, E. E. Wolf, 8 Tibbitts avenue—all of Bradford, Pennsylvania. Delaware agent, Corporation Service Co., Equitable Building, Wilmington, Delaware. To manufacture and deal in tires, tubes, casings, etc.

Knox Tire & Rubber Co., April 10 (Ohio), $400,000. H. M. Lybarger; G. H. Jones; M. G. Knoblock; G. Ball. Principal office, Mt. Vernon, Ohio. To manufacture rubber commodities.

Leavens & Howard, Inc., April 22 (Washington), $1,500. S. Leavens; G. F. Howard; A. S. Browne. Principal office, Vancouver, Washington. To deal in tires, etc.

Link Tire Co., W. R., March 27 (Florida), $30,000. W. R. and E. G. Link; W. G. Thacher—all of Orlando, Florida. Principal office, Orange and Central avenues, Orlando, Florida. To deal in tires and accessories.

Long-Wear Tire & Rubber Co., Inc., April 27 (New York), $500. R. A. Daly; T. F. MacMahon; B. G. Elliott—all of 1400 Broadway, New York City. To manufacture tires, etc.

Malickson, Inc., Philip S., April 27 (Delaware), $100,000. F. R. Hansell; I. V. Pimm—both of Philadelphia, Pennsylvania. E. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in tires, tubes, etc.

Maryland & Delaware Rubber Co., May 4 (Delaware), $25,000. D. O. Hastings; C. A. Southerland; S. F. Coursen—all of Wilmington, Delaware. Delaware agent, D. O. Hastings, Industrial Trust Building, 10th and Shipley streets, Wilmington, Delaware. To do a general sales agency business and to distribute rubber goods.

Meade Rubber Co., April 6 (Massachusetts), $150,000. J. Meade, president and treasurer; P. H. Mahoney, vice-president; D. J. Fraser, assistant treasurer and clerk—all of Stoughton, Massachusetts. Principal office, Stoughton, Massachusetts. To manufacture and sell rubber goods of all kinds.

Medford Tire Co., February 11 (Oregon), $5,000. L. D. and E. J. Jones; B. F. Lindas. Principal office, Medford, Oregon. To buy, sell and repair tires (Name changed on March 21 to Jones & Kirkpatrick, Inc.)

Merchants Tire Co., February 16 (Massachusetts), $50,000. A. Llebson, president; M. Katz, treasurer—both of 378 Columbus avenue, Boston, Massachusetts. Principal office, 378 Columbus avenue, Boston, Massachusetts. To deal in tires and tubes.

Missouri Tire Co., February 1 (Missouri), $10,000. B. J. Fitzsimmons, president; J. A. W. Sumner, secretary and treasurer. Principal office, 3118 Locust street, St. Louis, Missouri. To distribute Oldfield tires.

Monkey Grip Rubber Co., May 3 (Delaware), $1,500,000. T. L. Croteau; M. A. Bruce; S. E. Dill—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in tires, etc.

Morgan-Sorgen Co., March 30 (Florida), $30,000. R. C. Morgan, president; J. W. Sorgen, Sr., vice-president; J. W. Sorgen, Jr., secretary. Principal office, Jacksonville, Florida. To manufacture, buy, sell and deal in tires, etc.

Naugatuck Tire & Rubber Co., May 1 (Delaware), $1,500,000. C. B. Outten; S. L. Mackey; L. C. Christy—all of Wilmington, Delaware. Delaware agent, Corporation Service Co., Equitable Building, Wilmington, Delaware. To manufacture and deal in tires, tubes, etc.

Niles Tire & Rubber Co., The, May 5 (Ohio), $10,000. F. E. Turrell; H. L. Smith; M. L. Merchant; I. M. Whitford. Principal office, Niles, Ohio. To manufacture rubber products and deal in fabrics.

Osceola Motor Co., February 1 (Florida), $25,000. I. P. Timmons, president; M. P. Ragsdale, vice-president; S. G. Ragsdale, secretary. Principal office, Kissimmee, Florida. To deal in tires, etc.

Puritan Rubber Co., The, April 25 (Ohio), 50 shares no par value. K. T. Siddall; I. H. Findlay; C. A. Alexander. Principal office, Cleveland, Ohio. To manufacture rubber products.

Red Giant Tire & Tube Co., February 24 (West Virginia), $50,000. E. H. Witten, president; S. T. Bird, secretary; R. N. Vermillion, treasurer. Principal office, Princeton, West Virginia. To distribute tires and tubes.

Resilient Tire Co., The, April 24 (New Jersey), $250,000. B. G. Erler, 7321 Oak avenue, Oak lane, Pennsylvania; T. J. Davidson, 209 Arch street, Camden, New Jersey; J. Richter, 316 East 86th street, New York City. Principal office, 312 Market street, Camden, New Jersey. Agent in charge, F. G. Homan. To deal in tires.

Richland Rubber Co., May 1 (Ohio), $1,000. C. Hoffman; G. W. Stephens; P. H. Ober; I. E. LaDow. Principal office, Mansfield, Ohio. To manufacture rubber tires, tubes and all rubber articles.

Robbins & Fonner Tire & Repair Co., April 10 (Ohio), $10,000. G. W. Fonner; L. A. Robbins; E. L. Bowen. Principal office, Canton, Ohio. To deal in tires and repair same.

Saint John's Motor Co., April 27 (Florida), $50,000. J. W. Reddenbery, president; P. V. Norton, vice-president; R. L. Hendricks, secretary. Principal office, St. Augustine, Florida. To deal in tires, etc.

Shaw Co., The E. C., April 7 (Ohio), $15,000. E. C. Shaw; F. W. Weber; C. A. Grome. Principal office, Cincinnati, Ohio. To manufacture and deal in rubber marking devices.

Simpkins Tire Co., March 15 (Florida), $20,000. E. G. Simpkins, president, 2233 Post street; C. T. Chase, vice-president; P. M. Clarkson, secretary and treasurer, both of Vernon Terrace—both of Jacksonville, Florida. Principal office, 341 West Forsyth street, Jacksonville, Florida. To retail tires, also to do vulcanizing.

Simplex Rims Inc. of the Midwest, April 19 (Delaware), $1,000,000. C. B. Outten; S. L. Mackey; L. C. Christy—all of Wilmington, Delaware. Delaware agent, Corporation Service Co., Equitable Building, Wilmington, Delaware. To manufacture and deal in and with rims for motor vehicles.

Sumatra Rubber Specialties Co., April 25 (Ohio), $10,000. E. G. Hectel; L. P. Feezel; O. L. Hodgson; W. R. Wallace. Principal office, Salem, Ohio. To manufacture rubber specialties.

Summit Rubber Co., April 4 (Ohio), $125,000. M. Nobil, president; C. E. Schwartz, treasurer; D. M. Siff, vice-president; G. B. Nobil, secretary. Principal office, 319 Bowery street, Akron, Ohio. To deal in rubber footwear, automobile tires and rubber sundries.

344 Tire Co., The, May 3 (Ohio), $2,000. R. E. Sheets; K. M. Alsfauch; J. G. Schmidt. Principal office, 1553 Gallia street, Portsmouth, Ohio. To repair and deal in tires and tubes.

Union Service Co., May 16 (Ohio), $50,000. W. C. Seran; G. W. Scott; C. R. Bodan; F. B. Melchoir. Principal office, Canton, Ohio. To deal in tires, tubes, etc.

United Tire Stores Co., Inc., March 1 (Delaware), $250,000. T. L. Croteau; M. A. Bruce; S. E. Dill—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture, sell and deal in all kinds of tires.

United & Globe Rubber Co. of Texas, January 11 (Texas), $10,000. R. H. Moers, president; K. C. Barkley, vice-president; H. B. Schlesinger, secretary, treasurer and general manager. Principal office, 704 Franklin avenue, Houston, Texas. To distribute the United & Globe products.

Universal Tire Sales & Repair Co., May 10 (Massachusetts), $50,000. A. H. Nicodemus, president; D. C. Gilliland, treasurer, both of 176 Central avenue, Milton; M. McLaughlin, clerk, 34 Webster street, Brookline—both in Massachusetts. Principal office, Boston, Massachusetts. To repair and deal in tires, etc.

Western Rubber Mold Co. of Ohio, April 28 (Ohio), $10,000. C. P. Raney, president and general manager; M. N. Crumbling, secretary and treasurer. Principal office, 913 South Main street, Akron, Ohio. To deal in repair materials and suppplies.

Winter, Ray, Tire Co., May 1 (Kentucky), $10,000. R. Winter, president; R. H. Jones, vice-president; C. C. Covington, secretary and treasurer. Principal office, 4th and Jefferson streets, Paducah, Kentucky. To sell tires, tubes and accessories.

Wolfe, J. M., & Co., April 19 (Florida), $2,500. J. M. Testerman, president; C. Z. Osborne, vice-president; J. M. Wolfe, secretary. Principal office, Umatilla, Florida. To deal in hardware and automobile tires.

Works Tire & Rubber Co., March 7 (Illinois), $50,000. W. J. Mogilicki, 2037 West 18th street; W. F. Talaczynski, 3258 South Racine avenue; J. Suchon, 5742 South Hoyne avenue; J. P. Drish, 1801 West Washington street—all of Chicago, Illinois. Principal office, 2017 South Michigan avenue, Chicago, Illinois. To buy and sell tires, tubes, etc.

Wright Rubber Products Co., February 18 (Wisconsin), $100,000. C. Wright, president; F. A. Tecktonius, vice-president; L. J. D. Healey, secretary and treasurer. Principal office, Racine, Wisconsin. To manufacture rubber tiling and similar products.

Youngstown Tire Manufacturing Co., The, April 24 (Ohio), $10,000. O. C. Filson; D. J. Lynn; W. F. Judd; F. L. Jackson. Principal office, Youngstown, Ohio. To manufacture tires and rubber products.

President of the Pennsylvania Rubber Co.

CHARLES MEREDITH DU PUY, who early this year was elected president of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, was born in Pittsburgh, Pennsylvania, June 24, 1884. He was educated at the Hill School in Pottstown, Pennsylvania, at Phillips-Andover Academy, Andover, Massachusetts, and was graduated from Yale University, New Haven, Connecticut, in 1908.

Major Charles M. Du Puy

Starting in business in October of that year with the Pennsylvania Rubber Co., of which his father, Herbert Du Puy, is chairman of the board of directors, he worked first as a salesman, then as branch manager at Pittsburgh and Philadelphia, Pennsylvania, and later advanced to general sales manager. After a capable occupancy of that position he was elected to the vice-presidency of the company, and following the untimely death of his brother, Harry Wilfred Du Puy, he was elected to the presidency.

During the World War, Mr. Du Puy voluntarily served his country as a major in the United States Army. He is a thirty-second-degree Mason and a member of the Mystic Shrine.

Several interests other than the Pennsylvania Rubber Co. claim his attention. He is president of Breinig Bros., Inc., of the Tire Service Co., of the Q. & S. Tire Co., of the J. H. Parrish Co., and vice-president of the Morewood Realty Holding Co. and of the Goodwin Sand & Gravel Co.

The Rubber Trade in the East and South

Manufactured Goods

Spring revival of rubber goods manufacturing is not in the volume hoped for except in a few lines and in seasonable goods. In mechanical lines factories are busy supplying new railway equipment and standard supplies for general industry.

Tire plants are operating at nearly capacity production. New price adjustments on tires were announced early in the month chiefly to correct inequalities in lists and to eliminate the excise tax of five per cent, which is to be absorbed by the makers.

Heel and sole manufacturing plants continue active. The wire insulating trade is in fair shape as are also sundries, novelties and balls and automobile topping.

Rubber boot and shoe factories are busy chiefly on tennis and sport shoes. Tickets for winter goods are much reduced, which is customary at this season. Weatherproof garments are dull.

New York

The Tidewater Chemical Co., Inc., has purchased the assets and goodwill of the Katzenbach & Bullock Trading Co., Inc., and, as its successor, will carry forward the business with address unchanged, 440 Washington street, New York, N. Y. The Tidewater company will also continue to handle the same line, chemicals, colors, and fillers. E. L. Bullock is vice-president.

The Spadone Machine Co., manufacturer of the Bolton bias cutter, formerly located at 126 Duane street, announces that the organization will hereafter be known as The Spadone Machine Co., Inc., with offices at 15 Park Row, New York, N. Y. Charles C. Spadone is secretary.

George S. Shugart, vice-president and general sales manager of the United States Tire Co., was recently elected a second vice-president of the United States Rubber Co., 1790 Broadway, New York, N. Y.

F. W. Dunbar & Co., a firm of crude rubber brokers, removed its offices, on May 1, from 280 Broadway to 113-115 Broad street, New York, N. Y.

W. D. Crumpton & Co., 8-10 Bridge street, New York, N. Y., purchasing and selling representative for foreign and domestic manufacturers, has been appointed United States agent for David Bridge & Co., Limited, Castleton, Manchester, England, manufacturer of rubber mill and rubber plantation machinery.

O. A. Barnard, president of Barnard-Lynch, Inc., 321 Broadway, New York, N. Y., sales agent for cotton mills, was previously managing director of J. H. Lane & Co., and was also interested in the development of the Callaway Mills. His name, however, should not be confused with that of H. H. Barnard, who, since the recent formation of Callaway Mills, Inc., is to be connected with the new organization as secretary.

Pablo Calvet & Co., a firm of rubber importers and exporters formerly located at 97-99 Water street, has removed to 9 Hanover street, New York, N. Y.

The Johnston Company, rubber broker and specialist in far eastern products, has moved from 15 Park Row to new offices at 2 Rector street, New York, N. Y.

Walter O. Singer has been recently appointed sales manager of the Advance Rubber Co., 21-39 Gardner avenue, Brooklyn, N. Y. This organization is now gradually increasing the production of its "Top Notch" tires, while 30 by 3½ and 31 by 4 straightside casings are also being manufactured. Louis M. Kaplan is secretary of the company.

Offices of The Horseshoe Tire Co., formerly at 211 West 76th street, were recently removed to 245 West 55th street, New York, N. Y.

The export division of the Pennsylvania Rubber Company of America, Inc., with general office at Jeannette, Pennsylvania, has also been moved to the new quarters now occupied by the New York City branch, at 2006-08 Broadway. This division, which will be maintained as a separate organization, is under the management of Dudley F. Yard.

The Registire Co., Inc., 1733 Broadway, New York, N. Y., newly organized for the production of the Registire valve for automobile tires, has elected the following officers: George J. Watson, president; R. G. Tagle, vice-president, and E. H. Currie, secretary. Messrs. Tagle and Currie are the inventors of the Registire.

J. H. Mason, who is chairman of the Rubber Proofers' Division of The Rubber Association of America, recently resigned as manager of the rubber division of the Duratex Co., to become general manager of the Vulcan Proofing Co., First avenue and 58th street, Brooklyn, New York. The latter firm manufactures rubber sheeting, offset blankets, cord tire spreading, etc.

Charles O. Lavett, who for a number of years has been connected with the Buffalo Foundry & Machine Co., Buffalo, N. Y., has recently resigned his position as engineer of tests and field erection. Mr. Lavett has been in charge of the research laboratory, and has been instrumental in developing much of the vacuum dryer equipment manufactured by this company. His plans for the future will be announced later.

John Woodward, of Buffalo, N. Y., has been appointed receiver in equity for The Batavia Rubber Co., Batavia, N. Y.

Pennsylvania

On May 1, The Bristol Co., Waterbury, Connecticut, manufacturer of recording instruments opened a new branch office in the Widener Building, Room 1311, Philadelphia, Pennsylvania, with C. C. Eagle, Jr., salesman and service engineer, in charge. Mr. Eagle was formerly manager of the company's Detroit office.

Among those taking an active part in the Ninth National Foreign Trade Convention, held in Philadelphia, Pennsylvania, May 10-12, were E. H. Huxley, of the United States Rubber Export Co., New York, N. Y., and D. L. Brown, of the Goodyear Tire & Rubber Export Co., Akron, Ohio. The former was chairman of one of the group sessions, which discussed "Public Education for Greater Foreign Trade," while the latter, as one of the group considering export advertising, made an address on the subject, "Dealer Helps."

George W. Osborn, manager of the Cleveland office of the Farrel Foundry & Machine Co., Ansonia, Connecticut, has been appointed sales manager and will be located at Ansonia.

Southern Notes

The Seward Wire Co., Parkersburg, West Virginia, recently capitalized at $150,000, plans to begin operations September 1, the company's product being rubber-covered insulated wire. The building, now in course of construction, will be one story in height, 80 by 200 feet, with a total capacity for 180,000,000 feet of wire yearly. Executives include: Thomas J. Seward, president; F. E. Bankwits, vice-president, and L. N. Hemenway, secretary and treasurer. With these, T. H. Logan and E. S. Moore were elected as codirectors.

The Paul Rubber Co., Salisbury, North Carolina, recently began operations in a well-equipped plant, and is steadily increasing the production of fabric and cord tires and inner tubes. Two new departments are planned for the manufacture of rubber heels and rubber footwear. S. Adinoff is superintendent.

The Rubber Trade in New Jersey

Manufactured Goods

The business conditions reported last month have not only been maintained but still further improvement is reported by local rubber manufacturers. Several mechanical rubber goods factories have been operating overtime, three of them all night, in the garden hose departments. This is unusual under the unfavorable weather conditions due to the general rains throughout the greater part of the country. This increased and continued demand for garden hose is evidence that jobbers' and retailers' stocks are so depleted that the opening spring demand, notwithstanding unfavorable weather, has been sufficient to cause this rush of orders. Rubber belting business has shown a similar expansion and many good sized orders have been received. The demand for jar rings continues, and the manufacturers making this line are looking forward to a good demand because of badly reduced stocks in the hands of distributers, and the promising prospects for a large fruit crop.

A steady demand for mechanical rubber goods by the railroad companies has been well sustained during the last thirty days, and with returning prosperity for them, this business should not only continue but substantially increase. Tire manufacturers claim to be operating at a higher production schedule than at any other time for over a year. Taken all in all, local manufacturers without exception are feeling optimistic and are looking forward to a well sustained demand through the usually dull summer months.

Trenton

The affairs of the defunct Zee Zee Rubber Co. continue to occupy the time of the courts, and the attention of the public. Judgment for $2,911.48 was awarded Frank B. Abbott in Mercer County Circuit Court against Irvin Zimmerman, former president of the Zee Zee Rubber Co., in a suit alleging misrepresentation in the sale of stock. Abbott was formerly manager of one of the Zee Zee Rubber Co.'s chain stores, and testified that he had been induced to invest in stock of the company by false promises and statements of the company's finances. Preparations are being made at the plant for the sale of the property by auction.

Another echo of the financial methods of the defunct Zee Zee Rubber Co. was heard before Vice Chancellor Buchanan, of Trenton, who recently signed an order requiring C. Francis Fisk, an incorporator of the Nottingham Rubber Co., to show cause why a receiver should not be appointed for the company mentioned. Fisk was one of the promoters of the Zee Zee Rubber Co. The Nottingham Rubber Co. was incorporated and granted a charter on November 2, 1921, capital authorized $500,000, to manufacture a patented so-called puncture proof inner tube. Samuel H. Bell, of Reading, Pennsylvania, who filed the bill in the Court of Chancery asking that a receiver be appointed, declares he holds 5,000 shares at a par value of $10, upon which he has paid $5,000 in cash into the company's treasury. The affairs of the company never went beyond the embryonic stage, although the intention to purchase one of the large local plants was announced.

Preferred stock holders and creditors of the Empire Tire & Rubber Corporation recently received a circular letter setting forth a plan for refinancing the company. As there is some opposition to the proposed plan, there is doubt about it being accepted.

The Ajax Rubber Co. reports very satisfactory business. The company recently adopted the plan of paying its employes by check, which has been found to be very acceptable. Some rubber workers were held up and robbed of their week's wages. Other rubber manufacturers are considering adopting the check payment plan also.

The Acme Rubber Manufacturing Co. is busy in all departments and operating a night force. A largely increased demand for "Acme" red letter tires has necessitated considerable expansion in this department.

Horace B. Tobin, wife, and daughter will sail for Europe next month to be gone for ten or twelve weeks. Mr. Tobin is president and now chief stock holder of the Woven Steel Hose & Rubber Co.

I. Ely Reed has been elected treasurer of the Mercer Rubber Co. with which he has been connected for twenty years or more. The company's business is increasing and its number of working hours is now fifty a week.

The Vulcanized Rubber Co., Morrisville, Pennsylvania (a suburb of Trenton), is operating twenty-four hours per day to meet the demand for hard rubber specialties.

After being a traveling salesman for the Home Rubber Co. of Trenton for the past thirty years, William G. Bergen has quit the road. During the last few years his territory covered Texas and Oklahoma and other southern states. His first position was with the old Trenton Rubber Co.

Plans have been filed for a one-story addition to the plant of the Crescent Insulated Wire & Cable Co., Inc., Trenton, New Jersey, the new construction to cost approximately $20,000.

Trenton rubber manufacturers are cooperating with the new Workingman's Safety and Sanitation Council, recently organized by the New Jersey State Department of Labor for the purpose of reducing accidents in industrial plants. James Cartlidge, of the Essex Rubber Co., has been made chairman of the new organization.

David Lewis, proprietor of the David Lewis Tire Co., has opened another store at Trenton. He also has branches at Allentown, and Easton, Pennsylvania. He is handling United States, Ajax and Mack cord and fabric tires.

Sparks caused by friction in machinery resulted in slight damage recently to the plant of the Capitol Rubber Co., Trenton. The concern manufactures rubber cement. The firemen saved three tanks of naphtha from exploding.

New Jersey Notes

The Rydon Tire & Rubber Co., Asbury Park, was permitted to bring about its own dissolution, proceedings for which had been begun before a temporary receiver was appointed. The company had never operated beyond starting the building of a plant for the manufacture of tires and other rubber products.

Several attempts have been made to sell the plant of the Stockton Rubber Co., Stockton, but no bidders have yet put in an appearance. Egbert K. Price, trustee in bankruptcy, has offered the plant for sale on several occasions and says that it will be on the market until it is disposed of.

The Sterling Tire Corporation, Rutherford, New Jersey, states that prospects have never been as good as they are today. March sales were larger than for any one month in the entire previous 14 years of the firm's existence, while production and working forces have been steadily increasing since early in 1921. Since February the plant has been operating 24 hours a day at top capacity, and with a daily production of 1200 tires, which will probably be increased to 1500 by the middle of the summer.

It is announced that, after May 1, 1922, the Vant Woud Rubber Co. will be located at 2-4-6 Johnson street, Newark, New Jersey.

John Tenney, president of the Howe Rubber Co., New Brunswick, New Jersey, reports his company has not only done a 100 per cent business throughout the period of the depression but has increased considerably. "Needless to say," he remarked, "our sales organization, of which Otis Cook is the head, has been responsible for our good showing. We feel very much encouraged that business is on its way back to normal, a condition which is reflected from the fact that we have more business contracts for this year than we can hope to deliver. I am glad to say that the tube end of our business is showing unusual activity, which indicates that the public is again willing to pay the price for high grade merchandise."

The Stanwood Rubber Co., Elizabeth, has begun the manufacture of tires and later mechanical goods will be added to its product. S. P. Woodward, of New York, N. Y., is president of the corporation, and C. O. Corey is superintendent. The trustees of the new concern are: Charles K. Cooper, Westwood, New Jersey, assistant treasurer of the Atchison, Topeka & Santa Fe Railroad; Charles A. Dana, Bernardsville, New Jersey, president of the Spicer Manufacturing Co.; Dr. D. Webb Cranberry, East Orange, New Jersey, director, Savings Investment & Trust Co.; E. Morgan Barridale, South Orange, New Jersey, secretary, New Jersey Chamber of Commerce; Edward Hutchens, Eau Claire, Wisconsin, consulting engineer; Manning Stires, Mount Kisco, New York, president and general counsel for the Morgantown & Wheeling Railroad; C. O. Corey, Elizabeth, New Jersey, assistant treasurer. The general offices of the company are in the Gotham Bank Building, New York, N. Y.

The Rubber Trade in Rhode Island

There has been little or no change in business conditions among the manufacturers of rubber goods in Rhode Island during the past month. The situation is practically the same as it was a month ago. The plants producing boots, shoes and keds are operating on a curtailed time and production schedule, with indications of further reductions unless an almost unlooked-for improvement in orders stimulates present conditions.

Tire plants, while busier than the shoe departments, are running close to order bookings with little disposition to accumulate any surplus stock, notwithstanding that the goods in storage have long since been greatly depleted. The prolonged textile strike in the Blackstone and Pawtuxet valley sections of the state, which began the middle of January, shows no signs of an immediate settlement, and as several mills that produce large amounts of tire fabrics are included among the plants affected by the strike, the tire factories are beginning to feel a tightening up in supplies from those sources.

The only rubber concerns that show anything approaching normalcy are those engaged in the manufacture of druggists' and household supplies and new goods and novelties. These are operating almost to capacity and have been right along. On the other hand, the wire departments are practically at a standstill with little prospect of any revival for some time to come.

The plant of the International Rubber Mills at West Barrington is being operated on a nearer normal basis than a month ago, officials of the concern state. There has been some night work recently because of a large rush order. The concern produces rubber-coated goods and has a large number of regular orders on hand. This plant is merged with the O'Bannon Co., and both concerns, together with an oilcloth plant in Taunton, Massachusetts, are now controlled by the Russell Co., of Boston. At the O'Bannon plant business is said to have improved considerably since the reorganization plans were effected. This plant, which manufactures artificial leather, is now being operated at normal capacity, and A. F. Carter, manager, states that the prospects are good for a busy summer. The officers under the reorganization are as follows: president, G. H. Clough; vice-president and treasurer, A. F. Carter; assistant treasurer, Edward Cunningham. Mr. Bowen, who long had charge of the O'Bannon interests, resigned soon after the reorganization was completed.

On Monday, May 8, both the wire and keds divisions of the National India Rubber Co. at Bristol began operation on a five days a week schedule, which it was stated would be continued until further orders. The plant had been operating for some time previously on a six days schedule, closing at noon Saturdays, but the new schedule eliminated Saturday work. This was a slight curtailment in the number of working hours but the standard daily schedule of production remained practically as before. There are now 3,800 employes at the factory and production is said to be approximately 18,000 pairs of keds daily. During the World War the largest number of persons employed at this plant at any one time was 5,700.

The National plant closed Friday night, May 26, but reopened on Wednesday, May 31, the day following Memorial Day. A shutdown may be necessary later in the season, unless there is a decided improvement in the order situation. The continued operation of the plant is wholly dependent upon orders. The factory is now running on the five days weekly schedule, which will probably remain in force until July 1, so far as the keds division is concerned. Business in the wire division, however, is extremely dull, and it is stated that an earlier shutdown might be necessary.

The following changes in the management of the various departments of the National company have recently been announced: Thomas E. Johnson becomes office manager, and in addition to the ticket and order departments, the schedule department will be under his supervision. John N. Bill has been made technical foreman of the stitching department and has oversight over all machinists and repairs and maintenance in that department; Edward J. Mason has been made production foreman of the stitching department and Joseph H. Partington is to be foreman of the top department, including the eyeletting and hooking sections.

The plant of the Narragansett Cotton Mill, maker of tire fabric at Apponaug, Rhode Island, which resumed operations about the middle of the month after having been closed for a number of weeks by the textile strike, has nearly half of its machinery in operation. The plant employs only about thirty operatives.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" by Henry C. Pearson, should be in the library of every progressive rubber man. "Rubber Machinery," by the same author, is equally authoritative in its line.

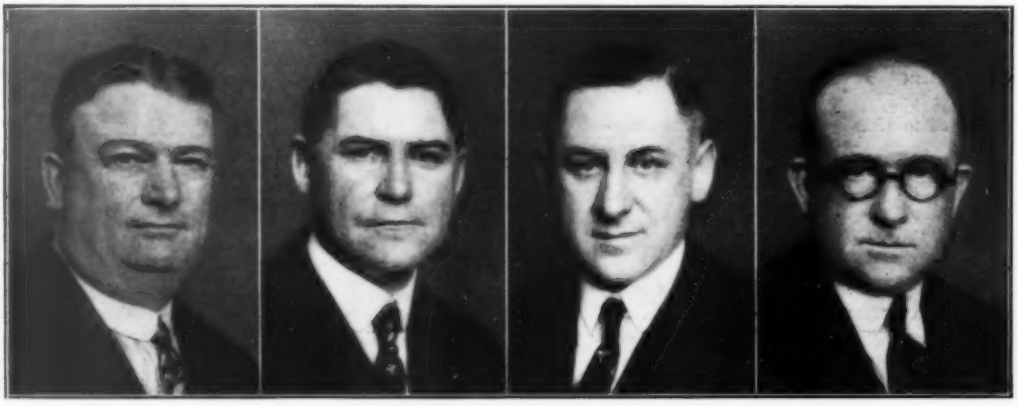
Important Developments for Meade Rubber Co.

JAMES MEADE, formerly sole proprietor of the Meade Rubber Co., Stoughton, Massachusetts, has recently incorporated his business for $150,000, and has associated with him a personnel made up of executives who will assist him in maintaining this rapidly growing industry.

The organization of the new company is as follows: James Meade, president and treasurer; Patrick H. Mahoney, vice-president and plant superintendent; Matthew Meade, secretary; and David J. Fraser, assistant treasurer. These officers also form the board of directors.

Since the establishment of the Meade Rubber Co. in 1916, several additions to the factory have been made, the enlargement of some months ago more than doubling the floor space and plant capacity. To provide also for further expansion a tract of nineteen acres of land, adjoining the site of the present buildings, has been recently purchased. In addition to this, new arrangements have been made for supplying power to the entire plant, while new machinery for the heel department and other sections has been lately installed. The company manufactures hospital sheetings, gem duck, and rubber heels, while it also meets the needs of various rubber shoe factories.

Much of Mr. Meade's success has been due to his extensive experience as a proofing expert and his invention of patented machines and processes for the manufacture of adhesive fabrics used in the shoe trade, including a multiple spreading and doubling apparatus, a process of making double-texture fabrics, and a method of preparing and applying adhesive coatings to fabrics without solvents. With the aid of these inventions the Meade Rubber Co. has taken a prominent place among Massachusetts manufacturers of rubber shoe trade specialties.



J. MEADE, President and Treasurer — D. J. FRASER, Assistant Treasurer — P. H. MAHONEY, Vice-President — M. MEADE, Secretary

Executive Personnel of the Meade Rubber Co.

The Rubber Trade in Massachusetts

Manufactured Goods

With a few exceptions rubber goods production in Massachusetts is now nearer normal than for many months. Tire and rubber soled canvas footwear factories are operating at or very near full time and turning out large tickets. Heavy rubber footwear orders for the fall and winter trade are in good volume and the coming season will see many novelties in gaiters, as manufacturers realize that style and distinction will sell heavy rubber footwear as well as leather shoes. Heel and sole production continues active and competition keen with an increasing number of firms in the trade.

Mechanical goods demand advances with improving general business, and greatly increased building operations are stimulating insulated wire production. There is less activity in druggists' sundries as summer approaches, though druggists' low stocks are maintaining orders very well. The widespread and rapidly growing interest in radio telephony has brought much new business to manufacturers of hard rubber. Some proofers are rather busier than last month, as new applications of coated cloths have developed large outlets. Clothing lines continue quiet, while automobile topping demand is good.

Boston Notes

The Automatic Aluminum Heel Manufacturing Co., 621 Albany street, Boston, has changed its firm name to Automatic Heel Co. and has taken over the business of the Parker Rubber Manufacturing Co., at the same address. The new firm is now making Automatic Quality rubber heels and Automatic aluminum heels.

Rubber heel production for this year at the Cambridge plant of the Boston Woven Hose & Rubber Co., totaled 14,444,590 pairs on April 4, an increase of 10,699,030 pairs over the same period of 1921. The present schedule calls for 500,000 pairs weekly. New mills are being installed and the automatic heel cutters and heel trimmers are being relocated in order to unify operations. Several of the factory offices are being rearranged for greater efficiency.

Dr. Lothar E. Weber, the well-known consulting rubber chemist, is in Europe in the interest of several of his clients.

Massachusetts Notes

As a means to reduce operating costs the Boston Rubber Shoe Co. has consolidated the manufacture of both light and heavy goods at its Malden plant and is running five days a week instead of four as formerly. All light weight rubber footwear had previously been made in the Melrose plant. The balance of production this year is greater on heavy goods and less on shoes than last year, and the increase in the former line made possible the longer running time.

L. D. Apsley, president of the Firestone-Apsley Rubber Co., Hudson, Massachusetts, and Mrs. Apsley returned on May 3 from an extensive tour abroad, which included England, Scotland, Turkey, Palestine, Egypt, Gibraltar, and several Mediterranean cities. Immediately after his return one thousand employes received, as a gift from Mr. Apsley, a Hudson Savings Bank book showing an initial deposit of five dollars.

Owing to the rapidly increasing demand for its turn sport footwear with canvas uppers, rubber soles and heels, the Cambridge Rubber Co., Cambridge, Massachusetts, has obtained additional factory capacity at some distance from the main plant and equipped it to produce this line exclusively. The output of Factory No. 2 is 2,000 pairs daily and will soon be materially increased.

The Rubber Trade in Ohio

Manufactured Goods

The month of May has realized much of the rubber business anticipated in the Akron district. The first of the month an influx of orders from dealers and manufacturers made necessary the addition of more rubber workers. Although this activity may not last more than three or four months, the high production now registered will consume old fabric and rubber commitments, some money will be earned by all the companies, and the industry as a whole will have a chance to really get on its feet.

Tire dealers who had been buying only for immediate needs were unable to meet the demand, and the result was rush express orders, many of which could not be filled, as many companies did not have large tire stocks. Automobile manufacturers doubled and tripled orders when their dealers started to buy in earnest because of record sales of automobiles throughout the country.

In mechanical goods the improved business conditions throughout the country, and orders from the railroads have brought a renewal of business. Druggists' sundries sales have shown some slight improvement, while rubber footwear, because of the season, was quiet. The demand for radio parts was reflected in the increased activity of hard rubber departments in several factories.

Increased cotton prices are reflected not only in a stiffening of tire fabric prices but advances in several instances. The immediate market for fabric is limited to the smaller companies, however, because of commitments still outstanding for the larger factories. For that reason increased prices did not affect the rubber industry materially. The same held true for increased rubber prices.

Towards the end of the month indications are that June will be an even better month for the industry than May has been.

The Passing of the Fabric Tire

Predictions are freely made that fabric tires will entirely disappear during the next year or two and that only cord tires will be made by the better class of factories.

The announcements by The Goodyear Tire & Rubber Co. and the Amazon Rubber Co. of new lines of cord tires which will sell for almost the same price as their fabric lines, the discontinuing of fabric tires except in the smallest sizes by The Mason Tire & Rubber Co. and the constantly increasing orders for cord tires as against fabrics among all the Akron companies point to the passing of the fabric tire.

Cord tires are being placed within the reach of all automobile owners. The effect of this movement upon many of the smaller and newer companies throughout the country which have been making a cheap fabric tire for the "gyp" trade is obvious.

Few Tire Seconds

Although Akron is producing nearly 87,000 tires a day, as compared with a peak of 115,000 a day, there are few "seconds." The employment of only skilled workers, a very small labor turnover and improved factory methods are making Akron efficiency proverbial.

More than a year ago it was reported that "seconds" resulting from improper workmanship and curing were getting scarce. With increasing production they seem to have almost ceased to exist.

Two Shifts Preferable to Three

A general survey including practically every tire manufacturer in the Akron district discloses that only extreme demand for tires will compel the use of a third shift. While this is theoretically a good means of increasing production without material increase in overhead it is not practical. The third shift formerly went to work at midnight and worked until eight in the morning. During the peak period when factory efficiency was comparatively low this was necessary, but now efficiency has increased so that two eight or nine-hour shifts will produce as much as the former three shifts.

The General Tire & Rubber Co. states that it will be more profitable to build than operate a third shift. The men failed to sleep through the day, and the night forces did not show the same efficiency as during the day or on the second shift that changed shortly after midnight.

At The Star Rubber Co., The American Rubber & Tire Co., the Firestone Tire & Rubber Co. and others, the same views are expressed. Even The Miller Rubber Co., which has been working two shifts to capacity, has not made any effort to install a third shift.

At Kent, on the other hand, The Mason Tire & Rubber Co. has found it necessary to organize a third shift, but it is possible that in this smaller city the efficiency of the men will not be as greatly impaired.

Cleveland Section, American Chemical Society

The rubber industry was inspected by members of the Cleveland Section of the American Chemical Society on May 3, and more than 200 members of the sections and guests attended the banquet at the Portage Hotel, which closed the meeting. Dr. W. C. Geer, head of the development department of The B. F. Goodrich Co., acted as toastmaster at the dinner, and the principal speakers were Edgar Fahs Smith, president of the American Chemical Society, and Dr. Harrison E. Howe, editor of *Industrial & Engineering Chemistry*. Mayor D. C. Rybolt, of Akron, and representatives of the Akron Chamber of Commerce were among those who made short addresses at the dinner.

Akron Notes

That the automobile saturation point will have been reached in three years when a total of 12,000,000 automobiles will be in operation in the country is the prediction of Harry S. Quine of The General Tire & Rubber Co. This will require 36,000,000 tires annually for replacement and 4,000,000 for new cars, according to Mr. Quine's figures.

The Mason Tire & Rubber Co., of Kent, has opened its third fabric mill at Millen, Georgia, and with its Kent and Quitman, Georgia, plants now has a combined fabric output of 4,250,000 pounds of fabric a year. The company has been buying fabric outside its own mill and a large part of the new output will be required for its own needs. In the tire factory a third shift has been organized and every effort is being made to raise production from 3,500 to 5,000 tires a day.

The Miller Rubber Co., Akron, has rented 100,000 square feet of storage space in the Standard Oil Cloth Co. building to

extend the tire manufacturing equipment in the plant. At least 7,500 tires a day are being built at present, which is easily 1,000 more than were built at peak times. It is believed that dividend payments on preferred stocks may be resumed June 1.

The Seiberling Rubber Co.'s production in its two plants has been increased to 2,400 tires and 2,600 tubes, and heel production at the Barberton plant has risen to 15,000 pairs a day. Orders are being received for more tires than can be made at present. Thus far the company has not gone into the production of mechanical goods, although this step is anticipated. During the month tire prices were reduced to standard. The company admitted that prices had been set high in order to obtain a good class of dealers.

Increased truck activity throughout the United States, and especially the increased building activities during the last two months, have materially affected truck tire production at the Swinehart Tire & Rubber Co. plant. At the present time this department is very close to capacity, while the other departments continue to show increases.

The affairs of the Phoenix Rubber Co., Akron, which has been in the hands of Joseph Winnum, receiver, for more than six months, continue to be the subject of litigation before special master Harry L. Snyder, referee in bankruptcy. Efforts are being made by some of the creditors to place the company in bankruptcy and the company is making efforts to show it is solvent.

The Trump Rubber Co., organized by E. H. and R. M. Trump, and utilizing the former Denmead Rubber Co. plant in East Akron, has increased production of men's belts to 15,000 a day and contemplates increases in this line as well as the addition of a line of women's colored belts. The opening of the women's belt line has been somewhat delayed through the opening of a line of mechanical goods, including automobile floor and running board mats and gaskets. Approximately 30 men are employed at the present time.

The American Rubber & Tire Co. has reached capacity production with two shifts a day, although two shifts working at less than capacity have been in the factory for several months.

The Star Rubber Co.'s production has gone to capacity with two shifts a day. With high priced commitments worked off and having added a second line of tires last year, making it unnecessary to purchase new equipment at the present time, the company believes that the present year will be a profitable one.

During the latter part of the month The B. F. Goodrich Co. increased the quota of men at work in its plant. Production with the increased forces will be in the neighborhood of 16,000 tires a day.

The Amazon Rubber Co., Akron, has inaugurated a vigorous campaign to obtain additional business. Its first step in this direction was the announcement of a new line of cord tires which will sell to the dealer for considerably less than the regular line of cords. William J. Shea, formerly central district manager of The Portage Rubber Co., has been appointed sales manager.

The Western Rubber Mold Company of Ohio has been taken over by the Western Rubber Mold Company, the original name, however, being retained. The new organization, with offices at 913 South Main street, Akron, Ohio, will carry a full line of tire repair materials and supplies, while the sales and service departments will be considerably increased. C. P. Raney is manager.

C. M. White, Jr., has resigned as sales manager of Firestone Steel Products Co., and has formed his own organization, to be known as White & Co. This new concern, with offices at 602-603 Flatiron Building, Akron, Ohio, will handle materials and equipment for the rubber industry.

The new non-skid engraving machine perfected by the Summit Mold & Machine Co., Akron, is being demonstrated in one of the largest rubber plants in Akron, where a battery of seven of these machines has been installed. The results are said to be greater production, accuracy in spacing, and the elimination of a great amount of hand finishing. The Summit company also make cores, molds and special machinery for rubber plants.

The Falor Manufacturing Co., Akron, manufacturer of the Falor cross-grain, seamless inner tube, has been reorganized under the name Falor Rubber Co., with general sales offices at 910 South Michigan avenue, Chicago, Illinois. The company is moving into the former B. & W. Rubber Co. plant at Betts Corners. Production of tubes reached 1,400 a day with three shifts working in the former and smaller plant, and the move to the larger factory building was made necessary by increased demand. Shelby A. Falor is president of the reorganized concern; G. C. Marsh, treasurer; and C. F. Schnee, secretary.

N. T. D. A. Head Sounds Warning

A. F. Valentine, president of the National Tire Dealers' Association, at a recent gathering of dealers in Akron, sounded a note of warning to manufacturers that the policy of selling to consumers by the larger rubber companies in sections which have been assigned as the exclusive territory of dealers will no longer be tolerated by the Association and steps will be taken to prevent this policy in the future.

Cleveland Notes

Harry D. Temporal, eastern salesman for the Farrel Foundry & Machine Co., has been appointed manager of the Cleveland office, 802 and 803 Swetland Building.

The general offices of the McGraw Tire & Rubber Co. were removed on April 15 from Cleveland to East Palestine, Ohio, where the company's plant is located. All communications should be sent to this new address.

Ohio Notes

The Republic Rubber Co., Youngstown, Ohio, has taken over the manufacturing interests of the North American Process Co., Inc., Malone, New York, manufacturer of an inner tube, formerly known as the "Adirondack Tire Tube," and now designated the "Republic Integral Tube." The distinguishing features are that it is circular, seamless, and made in a mold. Executives of the Republic Rubber Co. state that the gross sales are now running in excess of current production.

Sales offices of the Pioneer Products, Inc., at 370 Seventh avenue, New York, N. Y., will be closed at an early date, and all sales of Air-Peds, the company's original product, will in the future be handled by the Republic Rubber Co., Youngstown, Ohio.

The Division of Securities of the Department of Commerce, Columbus, Ohio, has, since December 1, 1921, forbidden the following companies to dispose of their stock in that State: Owen Tire & Rubber Co.; Hubbel Tire & Rubber Co.; Uncle Sam Tire & Rubber Co.; McElrath Tire & Rubber Co.; Cleveland Rubber Mold & Machinery Co.; Ultimate Tire & Rubber Co.; Master Tire & Rubber Co.; Royon Rubber Co.; Security Tire & Rubber Co.; Tuscora Rubber Co.; Portage Rubber Co.; Avalon Rubber Co.; Phoenix Rubber Co.; Andes Tire & Rubber Co.; Glamorgan Tire & Rubber Co.; Akron Maderite Tire & Rubber Co., and Subers Rubber Products Co.

The Champion Rubber Co. has been incorporated for $10,000, by Cuyahoga Falls rubber men, to manufacture inner tubes. Although the incorporators state they have a plant in sight, information regarding it has not been given out. The incorporators are W. H. Stillwell, George W. Coble, Orlando Wilcox, Eugene F. Ast and E. J. Achberger.

Plans to reorganize the Excel Rubber Co., Wadsworth, which went into receivership six months ago because of misunderstandings on the part of stockholders, have practically been completed. It is hoped to increase capitalization and this with an understanding reached with creditors will permit the company to start operations again. Every report issued thus far gives the impression that the company is solvent and every move made is towards rehabilitation.

Although negotiations have been under way with several interested parties looking towards the sale of the Biltwell Rubber Co. plant in Barberton, Allen F. Ayers, receiver, announces that thus far no definite statement regarding the sale of the property can be made. The factory has been idle almost two years. Its capacity is close to 1,000 tires a day.

The Standard Tire Co., of Willoughby, is now producing 350 tires a day, which is very close to capacity. The company has overcome previous difficulties and now seems to be very well along on the road to success.

Stockholders of the Buckeye Rubber Products Co., Willoughby, Ohio, at an adjourned meeting May 10, elected the following board of directors: J. Edward Weit, Judge David L. Rockwell, Charles W. Ehrke, R. A. Schwemley, and E. L. Stimson. This board has organized and chosen the following officers and executives: J. Edward Weit, president; Judge David L. Rockwell, vice-president; Charles W. Ehrke, treasurer and general manager; H. H. Burton, secretary; C. A. Hudson, assistant secretary and treasurer, and E. L. Stimson, factory manager.

The Studebaker-Wulff Rubber Co., which a few months ago purchased the plant of the Marion Tire & Rubber Co., Marion, Ohio, began production at this factory about March 1. The present daily output of 100 casings and 100 inner tubes is being increased as fast as possible, and it is hoped that by July 1, 250 to 300 tires a day will be manufactured. The plant is well equipped with modern machinery and appliances, and has a capacity per day of 500 casings and 1,000 inner tubes. B. F. Wulff is vice-president and general manager.

The Studebaker-Wulff Rubber Company's Plant, Marion, Ohio

The Rubber Trade in the Midwest

Monthly Meeting of Midwest Rubber Manufacturers' Association

The regular monthly meeting and luncheon of the Midwest Rubber Manufacturers' Association was held May 9 at the Hotel Morrison, Chicago, Illinois, with W. W. Wuchter, president, presiding.

The principal speaker at the meeting following the luncheon was Homer Buckley, of Chicago, who gave an interesting practical talk on credit accounts and sales.

G. M. Parker, of the Salmon Falls Manufacturing Co., Boston, Massachusetts, stated that a shortage of tire fabric exists and higher prices in the cotton market are anticipated to occur shortly.

E. G. Welch, of the All Metal Valve Co., exhibited and explained the Holt valve.

At the meetings of the Board of Directors and Executive Committee held after the luncheon, there was read a resolution passed at the April meeting of the Chicago Tire Dealers' Association. This resolution recommends that all tire manufacturers adopt the policy of leaving the serial numbers on all tires, and that tires deemed seconds be branded with the word "Seconds." This method will aid in identification of stolen tires, otherwise the removal of the serial numbers causes the dealer to suffer a loss which is not covered by any insurance.

Midwestern Notes

Recently elected officers of the Des Moines Tire Dealers' Association comprise the following: A. R. Corning, Corning Rubber Co., president; Ward Schooler, Schooler Rubber Co., vice-president; and W. H. Bishop, Midwest Tire & Supply Co., secretary and treasurer. The last-mentioned organization deals exclusively in Kelly-Springfield tires, and is located at 413-415 Eleventh street, Des Moines, Iowa.

The Wright Rubber Products Co., Racine, Wisconsin, is building a modern factory for the manufacture of rubber tiling. Executives of the new organization are: Clarence Wright, president; F. A. Tecktonius, vice president, and L. J. D. Healey, secretary and treasurer. These officers, with the following, constitute the board of directors: John W. Bate, H. F. Johnson, U. F. Durner, Stephen Bull, and George Kamm.

The Gillette Rubber Co., Eau Claire, Wisconsin, is now operating under the direction of Frank C. Hermann and C. W. Lockwood, as receivers. Plans for reorganization are developing and the business of the company under the new management is said to be increasing.

The organization formerly known as the Sanitary Rubber Novelty & Manufacturing Co., announces a change of name, and also a removal to new quarters in order to provide better facilities for its increasing business. The company will hereafter be known as the Sanitary Rubber Novelty Co., while the new address will be 331 West Ohio street, Chicago, Illinois.

At a convention of the Society of Industrial Engineers, recently held at Detroit, Michigan, one of the speakers was Fred M. Sawin, of the Federal Rubber Co., Cudahy, Wisconsin.

R. H. Geier and L. H. Winne, office manager and sales manager, respectively, of the Chicago branch of the Buffalo Weaving & Belting Co., Buffalo, New York, were formerly with W. H. Salisbury & Co., Chicago, Mr. Geier having been thirty-six years and Mr. Winne twenty-one years with that company.

An organization known as the Wisconsin Tire Dealers Association has been formed, and the following officers elected: H. A. Ruhnke, president; W. E. Gnatzig, vice-president; and S. A. Rowe, secretary-treasurer. The address of this newly-organized association is 472 Milwaukee street, Milwaukee, Wisconsin.

THE ALLIED GOLF CO., OF CHICAGO, ILLINOIS, REGISTERED ON March 28, 1922, a trade-mark on golf balls, including the figures "162," with all three figures of the same size. On this company's labels, however, the 6 appears larger than the other two figures, and the words "Allied Official" stand respectively above and below, while the whole is enclosed in a dotted double circle.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients," also "Rubber Machinery."

UNITED STATES RUBBER CO.'S NEW KANSAS CITY OFFICES

The new branch building, recently opened by the United States Rubber Co. at 313-323 West 8th street, Kansas City, Missouri, represents one of the largest and best equipped constructions in this company's entire organization. The eight stories contain 200,000 square feet and provide ample room for offices and sample

United States Rubber Co.'s Kansas City Branch

rooms, as well as for a full line of rubber footwear, clothing, druggists' sundries, felt footwear, mechanical goods and sole and heel products.

In this new branch are consolidated the departments formerly devoted to footwear and mechanical rubber goods, while the building is conveniently situated in the Kansas City wholesale district, and easily accessible to out-of-town merchants.

The Rubber Trade on the Pacific Coast

Manufactured Goods

Generally speaking, sales of all kinds of rubber goods for the past month on the Pacific Coast show a satisfactory increase in volume over those of April, and prices are well maintained. In the building line the demand for mechanicals is at last showing improvement after a period of quiet. The tire trade with the coming of summer shows considerable activity. Factories and mines are coming into the market for more belting, packing, hose, and valves; and there is still a good inquiry for garden hose, although the demand usually cases up earlier. Dealers in druggists' sundries report a somewhat better sale and good prospects. A scarcity of labor troubles on the Coast adds not a little to general trade cheerfulness.

Los Angeles and Vicinity

The Samson Tire & Rubber Co., 410 West Pico street, Los Angeles, recently received its first direct shipment of crude rubber from Singapore, the cargo being delivered at Los Angeles harbor, instead of San Francisco, as heretofore. The large additions to the company's plant at Compton are nearly finished, and by degrees operations are being extended in the new structures to meet a heavy demand for large cords. President Adolf Schleicher has been in the Northwest for several weeks conferring with managers of Samson agencies.

The Eno Rubber Corporation of Los Angeles has just been incorporated for $500,000 to take over the business and plant of the George W. Eno Rubber Co., 1026-1032 South Los Angeles street. The plant has recently been enlarged and much new machinery and other equipment added. The Eno company makes X-O (outer shell) tires and vulcanizers for applying them, inner tubes, radiator hose, blowout shoes, repair materials, plumbers', motion picture, and other rubber goods. Roy R. Messer is president and general manager; W. J. Voit, vice-president and director of sales; and G. K. Norton, secretary-treasurer.

A very encouraging report on trade conditions in general is made by the United States Rubber Co. in the Southwest. The Los Angeles branch has scored almost 100 per cent increase in general sales over the same period a year ago. Time on dating orders for tires, tubes, and some other lines, the expiration date of which was set for May 8, has been extended until further notice in order to take care of customers who have been obliged to delay their orders. Most of the companies operating on the Coast quit on "dating" time April 1. The new United States Royal Cord tube has been one of the best sellers lately.

The Goodyear Tire & Rubber Company of California, Los Angeles, is getting ready for quantity production on its new 30 by 3½ cross rib cord tire, a single-cure product, which will be sold at 25 per cent less to consumers than the all-weather fabric tire of the same size. The California factory is running at better capacity than a year ago, and the chances are this will be increased shortly. The stock of the company has recently scored a marked advance, as has also that of the Goodyear Textile Mills.

The Giant Rubber Products Co., maker of Giant puncture proof inner tubes, has opened a new factory and salesroom at Figueroa and Ottawa streets, Los Angeles.

The Hackett Tire & Battery Co., 318 East Third street, Los Angeles, is erecting a large factory at 603 East Fourth street, where it will not only do a general vulcanizing business but also make storage batteries.

That tire fabric will be made for the coast trade in about six months is the statement made by the Imperial Cotton Mills Co., Los Angeles, which is now hurrying the equipment of its $700,000 mills for manufacturing other cotton fabrics. The company has been assured of considerable business from tire manufacturers on the Coast.

Dr. Norton F. W. Hazeldine of Los Angeles, California, inventor of the Hazeldine solar light, heat and draft system of drying fruits and vegetables, now claims that the same process can be applied advantageously to the drying of crude rubber and fabrics. His outfit in general consists of a glass house with the glass so constructed that the rays of the sun are not focused but spread or diffused over the surface to be treated.

The Hendrie Rubber Tire Co., Torrance, California, is not owned by The John E. Thropp's Sons Co., although the stockholders of these two organizations are identical. The four brothers, John E., Peter D., Thomas H., and Frank W. Thropp, are the owners of The John E. Thropp's Sons Co., the Eureka Flint & Spar Co., and the Hendrie Rubber Tire Co. They also have a controlling interest in the Trent Rubber Co., Inc., Trenton, New Jersey.

A plant for grinding on a large scale barytes, magnesite, graphite, gypsum, talc, ochres, and other minerals used in the rubber industry is being completed by the United States Nonmetallic Minerals Corporation, at Richmond and Daly streets, Los Angeles. The crushers will have a capacity of ten carloads daily, and the grinders will have 200 tons daily capacity, the equipment being modern in every way. The official staff, composed wholly of chemists and mineralogists, is headed by Arthur F. Flynt, and offices are now in the Merritt Building, Broadway and Eighth street, Los Angeles.

San Francisco

After seventeen years' service with the United States Rubber Co., the latter part of it being with the San Francisco branch,

of which he was manager, Tom H. Wilkinson has resigned and accepted the position of Pacific Coast representative of the Lee Tire & Rubber Co., of New York.

At a luncheon on May 13, the Rubber Club of San Francisco observed the first anniversary of its organization. The club, which is composed of executives of the rubber mills and managers of the local branches of the leading rubber companies of the country, holds monthly conferences at which, among other business, the rulings of various manufacturing concerns often misunderstood by dealers are plainly interpreted for the trade and the dealers are helped in various ways to place their business on a higher plane. The club frequently entertains visiting executives of large concerns in the East, Middle West, and other sections. It has helped much to promote a better understanding among dealers in rubber products, and to curb the activities of "gyps" in the tire trade.

San Francisco

A new concern dealing in crude rubber from the Orient and South America is the Coast Rubber Importers, Inc., 149 California street, San Francisco. The president is H. Rasmussen, and George Kells, J. V. Quigley and Clarence Shuey are associates.

The Rubber Club of San Francisco has officially endorsed The Rubber Association of America's standard tire warranty, and has also asked the Federal Government to prosecute dealers who bought tires stolen from the government warehouse at the Presidio.

The death recently is announced of B. D. Pike, of San Francisco, whose invention of a method for restoring resiliency to tires, belting, hose, and other rubber goods was described in THE INDIA RUBBER WORLD. Tire "processing," or reviving of rubber in used casings by the Pike method is carried on to a moderate extent in Los Angeles and San Diego, being handled by H. A. Schnelbach, 5918 Hollywood Boulevard, Hollywood, California.

A new merchandising plan, which is said to be meeting with success, is that of the V. K. Sturges Tire & Rubber Co., Oakland, California. Under the new method the purchaser of tires and tubes pays ten dollars for a three years' membership, and buys directly from the factory, thus eliminating the middleman's, the salesman's and other profits—a saving to the consumer, it is claimed, of 30 per cent. The Sturges organization is the only concern on the Pacific Coast which manufactures not only tires and tubes, but also its own molds and cores.

Pacific Coast Rubber Men's Golf Tournament

The Pacific Coast Mechanical Rubber Men's Golf Association, organized in 1919, will hold its annual tournament on June 12 and 13 at the Olympic Club golf course at Lakeside, San Francisco, California, with a banquet on the evening of June 13 as the closing event. This year the association has been divided into four districts, Washington, Oregon, Northern and Southern California, and a perpetual challenge trophy offered, to be contested for by the several districts. The '19 winner was Gardiner P. Towne, The Pioneer Rubber Mills; the '20 winner was William T. Powell, The B. F. Goodrich Rubber Co.; and the winner of the '21 trophy was J. B. Lippincott, Boston Woven Hose & Rubber Co.

The following is the board of directors handling the tournament this year: J. B. Lippincott, president; William T. Powell, vice-president; E. H. Pierce, secretary; R. H. Pease, treasurer; and Frank M. Steers, second vice-president.

Southwestern Notes

Bullis & Co., Liverpool, England, has bought practically the entire short staple cotton crop of A. M. Shenk in Imperial Valley, Lower California, twelve miles south of the California line, for $553,000 spot cash, and at an average price of 18⅓ cents a pound, irrespective of grade. The total amount is nearly 6,100 bales from the 8,500-acre plantation. The entire shipment is being made through Los Angeles harbor.

The additions to the plant of The Spreckels "Savage" Tire Co., San Diego, are nearly finished, much to the relief of the concern, which has been greatly handicapped in meeting a considerable demand for tires, especially large size cords. For May the company released a brand new product, a husky oversize full-round 30 by 3½ fabric tire, which carries an extra amount of rubber in tread and sidewalls, and which is expected to make a hit in the market. Under the direction of Royal B. Lee, the company has just started on an aggressive and extensive advertising campaign covering the entire coast territory and many of the inland western states.

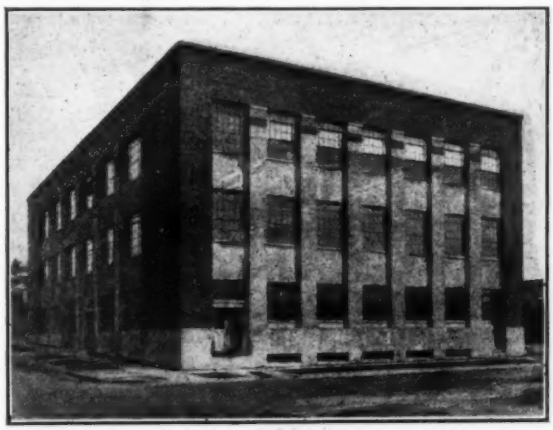
The Hydro-Toron Tire Sales Co. has opened a tire and accessory store at 1228 Fourth street, San Diego, and will handle Hydro-Toron tires. This concern is operated by Fisher & Cole who conducted tire stores at 740 Broadway, 1312 Fifth street, and Sixth and Market streets, San Diego.

Northwestern Notes

The Perfection Tire & Rubber Co., Fort Madison, Iowa, has recently established a factory branch at 318 Sprague avenue, Spokane, Washington. Its manager, B. W. Blakesley, reports a considerable increase in sales in the past few months.

Denver's Newest Rubber Factory

The Continental Rubber Products Corporation has acquired a modern three-story factory building at Eleventh avenue and Cherokee street, Denver, Colorado, and is installing new machinery and equipment, with a view to beginning production as soon as possible. At this plant, which has a floor space of 40,000 square feet, there will be a daily output, as at present contemplated, of 500



Continental Rubber Products Plant, Denver, Colorado

automobile tubes, 5,000 feet of radiator hose, 2,500 pairs of rubber heels, and 500 pairs of fiberized rubber soles. Plans also include the production of a full line of mechanical goods, such as plumbers' supplies, gaskets, garden hose, tubing of all sizes, etc., as well as rubber household specialties, such as bath mats, table covers, etc.

CONFERENCE OF FRENCH CHEMICAL ORGANIZATIONS

A Third International Chemical Conference will be held at Lyons, France, from June 27 to July 2, 1922, while the Second Congress of Industrial Chemistry will take place at Marseilles July 2 to July 7. On both occasions the general questions studied will be those concerning the mineral, vegetable and animal resources of the French colonies. Those interested should address Union Internationale de la Chimie Pure et Appliquée, 49 rue des Mathurins, (8), Paris, France.

The Obituary Record

Inventor of Many Rubber Machines

HENRY J. DOUGHTY, well known as an inventor of many important rubber shoe and tire machines and processes, died in Providence, Rhode Island, late in April. He was 73 years of age and active almost until the time of his death.

Born in Topsham, Maine, he first worked as a blacksmith's helper, soon going to Ashland, Massachusetts, to learn shoe last making. Following a brief period in Worcester, Massachusetts, he joined the forces of the Cox Last Works, Malden, Massachusetts, maker of rubber shoe lasts.

Henry J. Doughty

After nearly twenty years with this concern, Joseph Banigan, founder of the Banigan Rubber Co., induced him to go to Providence, Rhode Island, to design and build machinery for a molded rubber shoe. The result in 1886 was the well-known "Marvel" shoe of the Marvel Rubber Co., Woonsocket, Rhode Island, afterward absorbed by the U. S. Rubber Co.

Turning his attention to bicycle tires in 1888, Mr. Doughty patented a tube machine and several vulcanizing presses. The double tube tire machines were sold to the Dunlop Rubber Co. in England, where they are still used.

Further remarkable patents for rubber footwear machinery brought about the organization of the Atlantic Rubber Shoe Co., Auburn, Rhode Island, in 1900. Mr. Doughty then applied his rapid vulcanizing process to automobile tires, using original machines for the purpose. In 1914 he formed the Doughty Tire Co. to market the product. A loom wove a special fabric strip that was passed directly through a friction calender and built up on the core. The carcass was cured in a collapsible head vulcanizing press with heated platens.

When cord tires began to supplant fabric tires Mr. Doughty patented a machine which built up the carcass in less than four minutes. This machine has been taken over and is being developed by one of the large tire companies.

Alert and resourceful, Mr. Doughty solved many vexing problems in rubber manufacture. His contribution to the development of the industry was notable and his genial personality will be missed by many friends.

Veteran Canadian Rubber Manufacturer

James Robinson, identified with the Independent Rubber Co., Limited, Merritton, Ontario, Canada, and president of this organization since it establishment in 1885, was a well known and popular rubber manufacturer, whose recent death is a shock to his many friends. Born in Montreal in 1856, Mr. Robinson became in early life interested in shoe manufacturing, his first connection being with the old firm of Ames Holden & Co. In later years he organized not only the above-mentioned Independent Rubber Co., but also the Maple Leaf Rubber Co., of Port Dalhousie, Ontario, of which he was president for fourteen years, until it was disposed of to the Canadian Consolidated Rubber Co., Limited.

Mr. Robinson took an active part in the government of his city, being Alderman in 1906, 1908, and 1910, while he served also as president of such business organizations as the Minudie Coal Co., Nova Scotia; the Dorchester Electric Light Co., Quebec; and the Wholesale Boot and Shoe Association of Canada. He is survived by his widow and five children.

An Oldtime Rubber Man

Washington I. Finch, who died May 12, was born in Poundridge, New York, 76 years ago. He came to Bristol, Rhode Island, in 1872, and was first employed as a carpenter at the factory of the National India Rubber Co., where he remained for 32 years. From 1890 to 1907, he was foreman of the calender department, succeeding John Adcock. Fifteen years ago he went to Jamaica Plain, Massachusetts, where up to the time of his death, he was superintendent of the Clifton Manufacturing Co.

Mr. Finch was a Civil War veteran, having served three years and four months in a Connecticut regiment. He was commander of Babbitt Post No. 15, G. A. R., of Bristol, Rhode Island, for four years. For fifty-one years he had been a Mason and was a member of the Old Well Lodge of South Norwalk, Connecticut.

Superintendent of the Semple Rubber Co.

Anthony B. Thoman, plant superintendent of the Semple Rubber Co., Trenton, New Jersey, died suddenly at his home in Trenton recently of heart failure.

Mr. Thoman, who was 58 years old, was born in Cincinnati, Ohio. He was a pioneer in the rubber business, having been one of the first men to make an automobile tire. He removed to Trenton about fifteen years ago and was connected with the Empire Rubber Co. for five years prior to the organization of the Semple Rubber Co. seven years ago. He was a member of the Ancient Order of Druids, of Indianapolis, Indiana, and the Trenton Lodge of Elks.

Tire Price Changes

The Seiberling Rubber Co. reduced on April 24, the prices of Portage fabric tires ten per cent, and changed slightly the prices of Seiberling straightside tires to conform to standard lists. In announcing the new prices for Portage fabric tires the statement was authorized that tire production per unit of equipment and per man is on a much more efficient basis than heretofore, and warrants the reduction.

Readjustments of tire prices largely eliminating the five per cent excise tax on fabrics and cords were announced by a number of tire manufacturing companies. These reductions were effective either May 15 or 16 and were announced by the following companies: Firestone Tire & Rubber Co., Fisk Tire Co., Inc., Ajax Rubber Co., Inc., and Hydro-United Tire Co., Inc. The reductions of the latter company constitute a drop of 20 per cent on the Ford clincher sizes, and of ten per cent on all other sizes.

The Pennsylvania Rubber Co. of America, Inc., offered an average saving of 15 per cent to customers, effective May 11, for a limited period when all authorized Pennsylvania dealers throughout the United States were to give with each regular Vacuum Cup tire purchased one "Ton-Tested" tube free.

The Goodyear Tire & Rubber Co. announced on May 6 their new cord tire to be known as the Wingfoot Cross-Rib Cord to sell at approximately 25 per cent below the price of standard Goodyear Cords. The new tire is one cure, while the standard Goodyear is a two-cure tire. The new tires will be ready in June and sell slightly below the standard cord tire lists. It is being introduced

to meet a demand for lower priced and lighter cord tires for light weight cars.

It is stated officially that there is no change in the general tire price situation.

Foreign Tariffs

Australia

The increased Australian tariff rates, as revised December 16, 1921, include those on tires and inner tubes, as follows:

Articles	British preferential tariff	Intermediate tariff	General tariff[a]
Item 333 (*a*). Pneumatic rubber tires and tubes therefor, valued or unvalued:			
1. Covers weighing each 2½ pounds or less; tubes weighing 1 pound or less			
ad valorem	25%	35%	40%
2. Covers weighing each over 2½ pounds; tubes weighing each over 1 pound—			
Per pound	1*s.* 6*d.*	2*s.*	2*s.* 6*d.*
Or ad valorem	25%	35%	40%
Whichever rate returns the higher duty.			
Item 333 (*b*). Rubber tires other than pneumatic, including compositions made up in form and size suitable for use with pneumatic-tire covers as a substitute for the inner tube			
ad valorem	25%	35%	40%

[a] Applies to the United States.

Brazil

According to the Brazilian Budget Law of 1922 there are some important changes in that country's tariff regulations, and many kinds of goods may be admitted into Brazil during 1922, either at reduced duties or free of all charges. Among the articles included under the latter classification were noted all sporting goods imported directly by athletic, football, and rowing clubs affiliated with recognized leagues or associations.

Denmark

No preferential rate is accorded by Denmark on imported goods, and the customs duties are reasonable, though rates are subject to change at any time. Legal weight (net weight plus immediate packing) is used in applying this tariff. The present duty on tires is as follows:

Tariff No.	Articles	Crowns[b] per kilo
ex 64	Pneumatic tires	0.50
	Solid tires of rubber:	
ex 65	Combined with textile material	0.16
ex 66	Other	Free

[b] One crown equals $0.27.

The Danish tariff is now under revision, with the expectation of the duties being increased and converted to an ad valorem basis.

New Zealand

The New Zealand Minister of Customs claims that the importation of certain goods from countries with depreciated currencies will affect injuriously industries established in New Zealand or some other part of the British Dominions. Accordingly, special additional duties are to be levied upon certain classes of goods, among which is the following:

Class VI.—Rubber goods.
Rubber tires, rubber tiring, and inner tubes of rubber for pneumatic tires, n.e.i.
Rubber tires, bicycle, tricycle, perambulator, and similar and inner tubes of rubber for pneumatic tires, not exceeding 1¾ inches in diameter.

Spain

The new permanent customs tariff of Spain, issued February 13, contains a revision of both export and import duties, as compared with the former provisional tariff of May 17, 1921. It is noted that, under the new regulations, rubber, etc., from tires, outer covers, and inner tubes, cut in pieces and formerly free per 100 kilos gross (one kilo equals 2.2046 pounds), has under the new duty, and for a similar weight, a tax of 15 pesetas (one peseta equals $0.195 normal United States currency).

Interesting Letters from Our Readers

Crude Rubber Bucket Shops

TO THE EDITOR:

DEAR SIR: There has been quite a little publicity in the daily press of late regarding bucket shops, and the exposure has no doubt saved investors and others considerable loss. Is it not about time to undertake the exposure of crude rubber bucket shops?

There are firms in New York who are presumed to be doing a legitimate brokerage business, because they style themselves brokers, but who are no more or less than "bucket shops." Brokers are not supposed to quote prices other than those furnished by reputable importers or dealers, who have actual rubber for sale, and the broker is only entitled to his regular commission. These bucket shops quote to factories prices below the real market and accept the factory orders for future deliveries. When the delivery time comes, and the market is lower, they turn the orders over to an importer with instructions to bill the manufacturer at the contract price, and credit the difference between this price and the low market price, to the so-called broker. If the market goes against them, they do not make delivery. These are purely bucket shop methods.

These concerns have no rating or credit, and no standing with the reputable importers and dealers, and are affiliated with none of the trade organizations. They are simply bucket shop speculators selling short on the market, usually on a "heads I win, tails you lose" basis.

New York, N. Y. A. W. STEDMAN.

Rigid Rubber Glass

TO THE EDITOR:

DEAR SIR: I have been greatly interested in your rubber glass article in THE INDIA RUBBER WORLD May 1, 1922, and the mention that the rubber glass so far produced is soft and does not possess rigidity. As you are well aware, of course, the usual method of producing rigidity, aside from long continued vulcanization with excessive sulphur, is the use of reinforcing pigments. I should like to call your attention to the fact that light magnesium carbonate is a reinforcing pigment which possesses properties that would seem to make it peculiarly fit for producing rigidity in a rubber glass.

In an article published in your November, 1921 issue, I pointed out that if light magnesium carbonate was incorporated in rubber containing no litharge, zinc oxide or accelerators, the product before blooming took place was as translucent as though it contained no filler whatever. This is due to the fact that the index of refraction of the magnesium carbonate particles is almost identical with that of the vulcanized rubber. This fact is taken advantage of in the incorporation of magnesium carbonate in varnish where the same effect of transparency is observed. It should be possible, therefore, to incorporate probably as much as 40 to 50 volumes of light magnesium carbonate in rubber and still have the individual particles completely invisible in the transparent product produced by Mr. Jones' process.

As I have pointed out in the article mentioned, magnesium carbonate is quite a powerful reinforcing pigment and such a proportion of magnesium carbonate would give a vulcanized product a very considerable rigidity or hardness.

I believe this suggestion is worth calling to the attention of any rubber technologist who may be interested in the development of rubber glass.

H. W. GREIDER,
Mellon Institute of Industrial Research.
Pittsburgh, Pennsylvania.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

The Rubber Trade in Great Britain

By Our Regular Correspondent

Institution of Rubber Industry

AN interesting paper entitled, "Modern Developments in Rubber Machinery," was given by J. W. Howie, first at the Manchester meeting on April 3 and afterwards at the London meeting on April 11. Although the author is connected with the well known firm of Francis Shaw & Co., Limited, Bradford, Manchester, the paper was by no means limited to that firm's machinery or patents. The lantern-slide illustrations were numerous, the paper consisting mainly of explanatory details. American rubber machinery was well represented in the illustrations and the author's frequent references to American types of machines and factory procedure were listened to with much interest. Electric driving of rubber machinery, he pointed out, has become almost universal, due largely to the introduction of double helical machine-cut gearing. The Swiss patents have been in the hands of the Power Plant Co. of West Drayton, England, and the Falk Co. of America, for the respective countries.

A good deal of interest was aroused by the explanation of the Hunter dry kiln, and the questions asked concerning it were answered by Paul R. McCampbell, of the Hunter Dry Kiln Co. The enclosed mixing machine was obviously a novelty to many rubber men present, although Jos. Baker Sons & Perkins Co. and the Birmingham Iron Foundry in the United States have had their machines on the market for some time.

In Francis Shaw & Co.'s latest design of calender the rolls are 87 by 30 inches and are fitted with their patent turnover steam and water centers which enable the temperature of the rolls to be perfectly controlled.

Some of the speakers regretted the fact that spreading machinery had not been dealt with, but the author pointed out that he was dealing with modern developments and that the spreading machine has no novelty about it.

It is announced that Alexander Johnstone, managing director of the North British Rubber Co. Limited, will succeed J. H. C. Brooking as president of the institution. This is a matter of some importance in view of the small support hitherto offered by the leading members of the trade to the institution.

The Turn of Trade

Not only the confirmed optimists, but others rather of the opposite temperament are now saying that the revival of trade is imminent and point to good contracts in such various industries as engineering and bootmaking in support of their contention. Last month's exports were higher than in any of the previous twelve months and in one week of the present month 24,117 hands have been removed from the roll of the unemployed. As the motor industry is one which has been hard hit it is interesting to note that the big Austin motor works at Birmingham found it impossible to close down for the Easter vacation so great was the pressure of orders.

One authority states that practically all the great industries, apart from rubber, report slight improvement in business. This reservation is somewhat ominous, but it is possible that it refers to the planting and not the manufacturing side. If other trades are improving this must mean an increased demand for rubber goods, as there is hardly a trade which does not call for rubber goods of one sort or another. Though games do not come in the category of trade, the dealers in sports goods are traders and they are giving out their orders freely for what they require in rubber. Absence of shipping orders tends to keep the proofing trade quiet though there is steady work going through on home demands and very little unemployment. It is thought by some that the German-Russian compact will lead to extended buying of raw rubber in London by Germany for resale to Russia and that thus something will be done by way of reducing the increased stocks.

Financial Reports

North British Rubber Co., Limited

For reasons connected with the settlement of taxation the accounts for 1920 were delayed and are now issued in conjunction with those of last year. Although this prevents close comparison with those issued by other important rubber firms for 1921 it is obvious that the company comes into line with the others in having experienced a bad year in 1921. The profit for the last two years was £53,512, against £172,086 in 1919. The ordinary shares received an interim dividend of 5 per cent in 1920 and allowing for this, depreciation, debenture, interest, etc., there is a loss of £38,015. It is proposd to take £50,000 from the reserve in order to wipe this out and enable a six months' dividend to be paid on the first and second preference shares, carrying forward £6,360. The causes for the slump in the company's prosperity are the same as for other firms and repetition is unnecessary. The directors consider that the company has come through a critical period satisfactorily.

Victoria Rubber Co., Limited

This company, after providing for depreciation, income tax, etc., shows a net profit for 1921 of £14,191, the disposable balance being altogether £27,283. The ordinary shareholders get a 15 per cent dividend plus a bonus of 5 per cent, and £14,783 is carried forward. Although a refund of £11,246 of excess profits duty formed a large part of the disposable balance, yet the results of the company's working in such a year as last must be considered very satisfactory. It must be remembered that the firm is concerned with waterproofing and footwear and not with mechanicals and tires, and it appears that the heaviest losses in the trade have been associated with the latter.

Bell's United Asbestos Co., Limited

A balance dividend of 1*s.* 6*d.* per share has been paid on the ordinary shares, making a total distribution of 10 per cent for 1921; £34,013 is carried forward.

R. & J. Dick, Limited

This balata firm, whose accounts were recently referred to in this correspondence, have resolved to postpone payment of the half-yearly dividend on the preference shares due on May 15.

J. Mandleberg & Co., Limited

The profits of this firm have been adversely affected by the prevailing conditions of last year and amount to £22,415, though the substantial carry-over of £109,552 makes a total available balance of £131,967. The dividends of 7 per cent on the cumulative preferance shares, 8 per cent on the preferred ordinary shares and 10 per cent on the ordinary will be paid and £65,935 carried forward.

Scottish Vulcanite Co., Limited

It is some time since a fire of any magnitude has occurred in a rubber works, but this immunity was broken on April 7 by a serious fire at the works of the Scottish Vulcanite Co., Limited, which is affiliated with the North British Rubber Co., Limited, and is situated quite near the latter plant in Edinburgh. The

works fire brigade was soon reinforced by the city brigade and it was possible to prevent the fire spreading from the sawing room in which it originated, the rest of the large mill being saved. The Vulcanite company is an old established concern, having been started with American capital somewhere in the middle of the last century.

Society of Chemical Industry

The annual meeting this year will be held in July at Glasgow, the meeting of last year having been held in Canada. A novelty in the business part of the proceedings will be the showing of a film descriptive of rubber manufacture.

The Rubber Trade in Germany

By Our Regular Correspondent

The continued fall of the mark is responsible for further increases in the prices of rubber and gutta percha goods. Technical rubber goods were raised 30 per cent from April 7. Tires are about 20 per cent higher. Gutta percha goods will be quoted as follows: basic prices plus 250 per cent plus 100 per cent on the whole. Electrical goods are on an average 35 per cent higher again. According to a circular dated March 29 the new increases on surgical and druggists' sundries show increases ranging from 150 to 350 per cent. In all branches it is openly accepted that prices will probably see further increases before long.

Under present conditions it is natural that a remedy should be sought, and sliding scales are suggested for everything—for prices, for wages, for tariff, for postage, etc.

The high prices combined with tightness of money are to an extent responsible for the revival among retailers of a curious system of renting out for a small sum different kinds of druggists' sundries like bath tubs, inhaling apparatus, air and water cushions, ice-bags, etc. This system was very much in vogue in pre-war times and is now again in favor. The goods so lent are often sold again as new goods and seldom thoroughly disinfected before being offered for sale. Another little side line of some local rubber goods dealers is the buying and reselling of used articles employed in the care of the sick.

Rubber Scrap

While on the subject of old rubber, it may be pointed out that with the daily increasing rates for raw materials, a new demand for scrap and old rubber has arisen and good prices are being offered for these goods by dealers in waste and by rubber reclaimers.

Patent Laws

Up to quite recently the German patent laws did not require, together with the name of the applicant for a patent, the name of the actual inventor of the article for which protection was asked. However, German technical men have for some time been urging that the name of the actual inventor appear on the patent and now at last success attends their efforts, for from March 1, 1922, the new ruling providing for this will be effective.

New Goods

When the war was over Germans found that they were behind in a number of respects where the rubber industry was concerned. There were cord tires for one thing and then there was the enormous vogue of thin sheet rubber in all colors in the making of bathing caps and accessories. A good deal of attention is being paid to the manufacture of such caps and attractive models are being turned out by some of the leading factories.

An article which has been forgotten in America but is being revived in Germany is the diabolo which is being offered in red Pará rubber. The diabolo, it will be remembered, was a toy of tin or wood, in shape resembling two cones joined together point to point, cushioned with rubber on the edges, and was manipulated on a cord, either end of which was attached to a slender little stick. Balls of felt or plush with rubber inlay are also being offered by the same firm.

Company Notes

The net profits of the Continental-Caoutchouc-und Gutta-Percha Compagnie, Hanover, amounted to 32,563,617.27 marks in 1921. A dividend of 30 per cent and bonus of 15 per cent were distributed. It was pointed out that considering that something like 50 million gold marks had been invested in the concern, and this now had a value of 2,500,000,000 paper marks (taking a gold mark to equal 50 paper marks, although at the present rate of the mark this should be about 66 paper marks to a gold mark), dividends amounting to about 30,000,000 paper marks could not be considered unduly large, for this amount was only about 1.2 per cent on the capital invested. In 1913, wages and salaries amounted to 13,004,176 marks; taxes and social imposts 1,095,779 marks; dividends 6,750,000 marks. In 1921 the figures were 187,315,275 marks; 80,408,662 marks and 30,915,000 marks, respectively.

The Asbest-und Gummiwerke Alfred Calmon Aktiengesellschaft, Hamburg, reports net profit of 5,858,854.56 marks. A dividend of 20 per cent was declared. It is proposed to increase the capital by 28,500,000 marks, bringing it up to 47,500,000 marks.

The Hannoversche Gummiwerke "Excelsior," Aktiengesellschaft, Hanover-Limmer, reports net profits of 16,069,475 marks for 1921. This firm has just celebrated its sixtieth birthday. Now one of the premier rubber manufacturing concerns in Germany, it began 60 years ago, under the name of Hannoversche Gummikamm-Compagnie, to manufacture combs from hard rubber which at first was imported from England. Later on, the firm produced its own hard rubber and by degrees took up other branches of rubber manufacture until today all kinds of rubber articles, including pneumatic and solid tires, are produced. The Hanover works alone give occupation to over 5,500 persons. During the war, the company was one of the few rubber concerns that continued activities, although of course substitutes had to be made use of. In 1912 the firm celebrated its fiftieth birthday, when the name was changed to Hannoversche Gummiwerke Excelsior.

On March 1, 1922, the Peters Union Mitteldeutsche Gummiwarenfabrik Louis Peter, Aktiengesellschaft, Frankfort-on-the-Main, celebrated its fiftieth anniversary.

The founder of this firm is Louis Peter who, with a small capital and only six workmen, began to manufacture technical rubber goods in Frankfort-on-the-Main in 1872. During the first few decades progress was slow, but by 1893 a new factory had to be built, although the old one had been considerably enlarged. About this time the bicycle began to come into general use and Louis Peter early recognized the importance of rubber tires. He was the first to manufacture and put on the market a pneumatic tire that did not have to be gummed to the wheel rim and from this time on the firm expanded rapidly. In 1905 the firm was changed into a stock company. In 1907 the building of a new factory in Corbach in Waldeck was undertaken and when completed in 1908, the manufacture of bicycle tires and tubes as well as of most of the technical articles was transferred to this factory while the already extensive works in Frankfort-on-the-Main were given over chiefly to a new industry, automobile tires and solid tires. Later on, the manufacture of solid tires was also transferred to Corbach which had meanwhile added to its factories and where a workers' colony had sprung up. During the war, wood and iron tires were made here and later when large quantities of synthetic rubber were obtainable this product was used and a fairly useful tire turned out.

At present the firm employs over 2,000 persons. The laboratories are equipped with the most up-to-date apparatus for testing the raw materials and improving methods of manufacture.

The Rubber Trade in the Far East

By Our Regular Correspondent

Netherlands East Indies

While planters in Malaya were making strenuous efforts to bring about restriction, Dutch planters were indifferent. From time to time delegates from Malaya came here to discuss joint measures, but without results. Now, however, the attitude seems to be changing and views on the present situation are not quite as optimistic as some months ago. Perhaps the many company reports showing losses and practically no dividends have demonstrated the gravity of the situation better than anything else.

The bitterest opponent of forced rubber restriction is the Director of Agriculture. However, the government declared long ago that if those interested wanted restriction it was ready to enforce it. Now another planter, David Birnie, is leaving for Holland with the intention of getting shareholders to cooperate with the other countries, Malaya and Ceylon, in a restriction scheme whereby if rubber is below 1*s.* 6*d.* per pound, export duties should be levied on all rubber over 50 per cent of normal production, and if the price is over 1*s.* 6*d.* but under 2*s.*, all rubber in excess of 75 per cent of the normal output should be so taxed.

Taxation

Under present circumstances it is easily understood that the excessive taxation here is a sore subject with estate proprietors and business men in general. The imports are particularly hard on rubber producers, especially those in Sumatra.

As a result, the average gains of companies in Sumatra from the date of their foundation, works out exceedingly low. A local paper has figured the average dividends paid out by 41 companies on the East Coast of Sumatra from the date of foundation. The highest average for one company was 14.9 per cent; only three other companies averaged more than 10 per cent; ten companies averaged below 10 per cent and over 5 per cent; 17 estates paid out over one per cent but less than 5 per cent; and of the rest, five paid from 0.3 per cent to 0.9 per cent, while the others have only a zero to their name. The average over all the 41 companies works out at 4.4 per cent.

Of eight companies in Java and Sumatra with capitals ranging from 420,000 gilders to 9,000,000, three suffered losses ranging from 727,284 gilders to 162,498 gilders, two over 90,000 gilders and three between 28,000 and 36,000 gilders, during the past year.

Malaya

"Propaganda," the newest catchword, has to a certain extent replaced "restriction," "shake-out" and "survival of the fittest," which is a sign that the matter is now viewed from a new and less panicky angle. This is noticeable in the increasing number of letters and editorials appearing in local papers on the subject of rubber factories in Malaya. It is suggested that the government put a light tax on rubber exports, the funds to be used for propaganda purposes for popularizing new uses of rubber.

Rubber Novelties

Rubber soles made of unvulcanized, thick, gristly blanket crêpe seem to have received most attention. Many planters and others are wearing them and claim that they are in all respects greatly superior to other rubber soles. They are comfortable, do not draw and are extremely durable.

With regard to the manufacture of rubber in Malaya, an editorial that appeared in THE INDIA RUBBER WORLD, December 1, 1921, was not at all pleasing to the *Malayan Tin & Rubber Journal*. The latter says that soles made of pure blanket crêpe rubber and worn for some time did not creep or tear; on the contrary they showed little sign of wear, while tires have been successfully made in Malaya. "A company manufacturing rubber tires and other rubber goods in Malaya would make the American rubber manufacturers sit up and think. Malaya has supplies of compounding ingredients, fabrics could be imported from India, while Chinese workmen could easily be trained into skilled laborers and would be cheaper than the workmen of Akron."

A correspondent in another local paper thinks that producers should strive to so increase the uses of rubber as to make it a necessity. For this purpose rubber prices must be kept at a reasonable level and the aim should be to make small profits on large deals and not the other way round. Then dividends should be limited to 15 or 20 per cent. Rubber growers should be given a free hand to produce as much as they please. Strenuous efforts should be made to increase and spread the uses of rubber throughout the world. Factories should be opened in Hongkong (to supply South China) and in Shanghai (for the supply of North and Central China) for handling large quantities of sheet and scrap rubber to be used for the soles of Chinese shoes; for whole rubber footwear and any other purposes that may be deemed profitable.

The Rubber Stock Census

The complete figures of the rubber census for all Malaya show that the rubber stocks on December 31, 1921, were 51,333 tons. As no similar census has ever been taken, there are no figures on which to base a comparison, but it is held that stocks were substantially over normal. Towards the end of the year prices had risen and there was a pretty general hope of still better prices, so that there was a tendency to hold back sales. The break did not occur until January and it is the opinion that a good deal of rubber held for a rise was thrown on the market in February. Apparently stocks are still being liquidated and the output is still seriously ahead of supplies. The *Straits Times* gives the world stocks on December 31, 1921, as 69,465 tons in London, 10,500 tons in Liverpool, 51,323 tons in Malaya and 80,000 in the United States, totaling 211,288 tons. The detailed figures of rubber stocks in the Straits Settlements, Federated Malay States and Unfederated Malay States on December 31, 1921, are as follows:

	Smoked sheet	Unsmoked sheet	Pale crêpe	Brown crêpe	Un-treated scrap, including lump	Other rubber including latex in course of treatment	Totals
In hands of dealers, *long tons*	12,993	5,395	2,672	3,630	3,021	6,323	34,040
On estates	7,921	999	2,831	1,659	766	477	14,656
With customs	131	112	16	47	16	3	325
On railways	768	98	186	57	20	237	1,366
On harbor board premises and in transit by sea, between colony ports	.....	.....	Not classified		.....	.....	936
Totals. *long tons*	21,813	6,604	5,705	5,393	3,823	7,040	*51,323

*Includes 945 tons unclassified rubber.

F. M. S. Stock Census

A separate report referring only to stocks in the Federated Malay States has also been published.

The figures are based on returns from 644 European estates, 1373 Asiatic estates and 702 licensed dealers. Returns were also made by all station masters and supervisors of customs. These figures are not complete as no attempt was made to obtain returns from small holders; however this omission is not thought to be of much importance. Reliable figures as to acreage in bearing could not be obtained but it is believed to be not less than 70 per cent and may amount to 80 per cent. One district reported 89 per cent, which is exceptionally high.

The average European or large Asiatic estate normally carries from three weeks' to one month's output in stock. The small holder generally sells his output to a dealer as soon as possible. The Malay holder has a partiality for alum as a coagulant but since the prohibition of alum and the imposition of an import duty on alum, its use is not quite so general and the small holder sells his uncoagulated latex to the dealer. This accounts for the large

amount of "Other rubber including latex undergoing treatment" shown as being in possession of dealers.

Where facilities for sale exist as in Kuala Kangsar, stocks are very low. In this district, for instance, the stocks recorded on 80 small holdings of less than 10 acres in no case exceed four pounds per acre in bearing. Other districts were somewhat higher, but on the whole it appears that the small holder seldom has stock exceeding one week's production. In the case of somewhat larger holdings practically immediate sale is not quite so frequent. Taking all in all, however, it is held that the figures collected represent about 95 per cent of the stocks in the Federated Malay States.

As for excess stocks among Europeans, few cases of the holding of stocks greatly in excess of normal were reported. In the district of Klang, for instance, one of the more important planting districts of the country, out of 43 European estates with 53,654 acres in bearing, only two had stocks in excess of 50 pounds per acre in bearing. Of the remainder seven were closed down temporarily and had no stocks while the other 34 averaged just under 30 pounds per acre in bearing.

Most other districts show similar figures. For the whole of the Federated Malay States only about 20 estates carried abnormal stocks and the amount so held is estimated at 600 to 700 tons. The majority of returns from European estates showed nil under the head "Other rubber including latex in course of treatment." Evidently the weight of the latex was not found until some days after when the rubber was dry, and had been included under one of the other categories such as "Unsmoked Sheet." In the same way much sheet in process of smoking has been shown as smoked sheet.

The total stocks in the Federated Malay States, according to the census, are 13,575 tons; the actual stocks may be taken to be less than 15,000 tons and probably very little over 14,000 tons. Mr. Rex, Collector of Statistics, holds that taking present production at 10,000 a month, without any accumulation of stocks whatever, the stocks would be fully 10,000 tons. Therefore if his conclusions are correct, the excess stocks are between 4,000 tons and 5,000 tons, probably nearer the former than the latter. Of this, half is probably in the hands of European and Asiatic estate owners and the other half in the hands of dealers.

Below is a table showing the stocks of rubber held in the Federated Malay States on December 31, 1921.

	European estates	Asiatic estates	Total	By licensed rubber dealers	On railways	In transit with customs	Total	Grand total
Smoked sheet, *long tons*	3,687	1,774	5,461	936	514	13	527	6,924
Unsmoked sheet..	122	232	354	990	91	37	128	1,472
Pale crêpe	1,630	58	1,688	174	103	9	112	1,974
Brown crêpe	814	81	895	434	23	5	28	1,357
Untreated scrap, including lump ...	67	249	316	928	13	..	13	1,257
Other rubber, including latex in course of treatment	65	118	183	283	7	..	7	473
Unclassified	5	...	5	...	113	..	113	118
Totals..*long tons*	6,390	2,512	8,902	3,745	864	64	928	13,575

The Malaya-Borneo Exhibition

The Malaya-Borneo Exhibition, opened on March 31, 1921, by the Prince of Wales was thoroughly successful. Rubber and rubber manufactures, the latter both of local and overseas make, were seen. In the crude rubber section, the newest is naturally a demonstration of bud-grafting. Diplomas and medals were awarded to exhibitors of manufactured rubber goods, the Dunlop Rubber Co., Clouet and Co., and the Goodrich Rubber Co. receiving diplomas, while of exhibitors of locally made articles the Singapore Rubber Works was awarded a silver medal Tan Kah Kee and Tio Eng Hock received bronze medals and the Laub Plantation Rubber Works was given a diploma.

In the Arts and Crafts Section was the exhibit of the Malayan China Clay & Potteries Limited, the pioneers of a new industry commenced in Gopeng, Perak, early this year. The production of china-clay is also taken in hand, and in view of Malaya's ambitions in the way of manufacturing rubber goods, it is interesting to learn that sufficient china-clay is produced to permit large quantities being exported to India and Australia.

Plantation Company News

The difficulties that rubber companies experienced during 1920-1921 are very clearly illustrated in the following table showing profit, loss and dividends turned out by rubber companies in different parts of the East during that year and 1919-1920.

	1920-1921 Profit	1920-1921 Loss	1919-20 Profit	Ordinary Dividend 1920-21 Pct.	Ordinary Dividend 1919-20 Pct.
Anglo-Sumatra	.....	£11,958	£38,757	...	30
Asahan	.....	9,742	29,224	...	10
Baioe Kidoel	.....	2,382	92,309	...	20
Bertram Consolidated	£16,393	.....	99,182	5	30
Braunston (Malay)	.....	1,536	12,942	7.5	7.5
Rubber Plantations Investment Trust	.....	12,150	165,953	...	6
Sendayan (F. M. S.)	15,464	.....	9,183	15	10
Singapore United	.....	13,556	11,159	...	....
Sumatra Pará	.....	14,737	*30,026	...	16.7
Sungei Dahru	.....	4,432	11,737	...	5
Sungei Beaya (Sumatra)..	.....	17,672	31,288	...	10
Tandjong	.....	30,909	40,887	...	10
Tandjong Malim	17,644	.....	62,642	...	14.3
Tebrau	.....	31,540	19,760	...	....
Totals	£49,501	£150,614	£655,049	1.96	12.11

*After deducting Netherlands Indies taxation and directors' additional remuneration, made in 1920-21 on account of 1919-20.

Trustworthy figures regarding costs of production and prices realized have been hard to obtain, however, as far as can be ascertained from the published data. *The Times,* from which the above is taken, finds that the approximate figures of the companies in question work out as follows:

	1919-20	1920-21
Rubber harvested .....*pounds*	14,841,364	12,332,218
Average price obtained per pound.....	23.53*d.*	13.97*d.*
Average f. o. b. cost of production per pound...	13.65*d.*	13.99*d.*

The total production of these companies fell by 17 per cent in 1920-21 as compared with 1919-20, showing that the policy of output restriction by 25 per cent had been consciously put into practice.

It must be remembered that this policy was not adopted until the year 1920-21 was fairly well advanced. Some forward contracts have probably raised the 1920-21 selling figure to a certain extent; even so, it shows clearly how serious was the decline in rubber values. The cost figures must be treated with special caution, but broadly speaking, costs were sufficient to absorb the proceeds on rubber sales and additional charges as London office expenses, loss on exchange, etc., account for the losses made.

"Loss on rice" in connection with plantation rubber is an item that appears in many accounts.

An interesting estate is the Alpha Bernam Estate, the property of A. Naested. The total area is 2,100 acres. Of this, 650 acres are planted, and in a way that is unusual in the Federated Malay States. Crops of all descriptions have been and are being experimented with, those which do not pay being cut out for those that do.

The crops and areas now on the estate are: Rubber, 550 acres; coconuts, 100 acres interplanted and cover crops—castor oil, 180 acres; padi, 120 acres; pumpkins, 35 acres; tapioca, 20 acres; sugar, 50 acres, ubi kamili, 30 acres; ground nuts, 3 acres; roselle fiber, ¼-acre; and capsicum, ½-acre.

Recent Patents Relating to Rubber

The United States

Granted April 4, 1922

No. 1,411,411 Tire plug. D. Cohen, Memphis, Tenn.
1,411,447 Spring tire. C. J. Matt, Toledo, O.
1,411,506 Resilient tire. A. J. Ostberg and A. Kenny, Richmond, near Melbourne, Victoria, assignors to The Standard Rubber Works Proprietary Limited, Melbourne—both in Australia.
1,411,516 Tire. G. Reider, Los Angeles, Calif.
1,411,560 Collapsible umbrella with inflatable ribs. A. Beaty, San Gabriel, Calif.
1,411,568 Attachment for cotton-picking machines, employing hose. T. R. Gabel, Los Angeles, Calif.
1,411,671 Tire. F. J. Schrank, assignor to The Swinehart Tire & Rubber Co.—both of Akron, O.
1,411,727 Pressure gage. R. H. Henemier, New York, assignor to A. Schrader's Son, Inc., Brooklyn—both in New York.
1,411,783 Metal wheel and tire rim. G. K. Henderson, Indianapolis, Ind.
1,411,879 Pneumatic wheel. J. W. Dixon, Connellsville, Pa.
1,411,915 Tire construction. P. P. Grosso, Brooklyn, N. Y.
1,411,917 Tire alarm and gage. W. A. Harris, assignor of ½-interest to K. S. Conrad—both of Greenville, S. C.
1,411,922 Demountable solid-tire construction. F. McFadden, Baltimore, Md.
1,411,949 Portable appliance for cleaning car sides, employing hose. J. McN. Wilson, Montclair, N. J., deceased; C. E. Wilson executrix, assignor to Wilson-Imperial Co., a Delaware corporation.

Granted April 11, 1922

1,412,033 Garment supporter. G. D. Able, St. Louis, Mo.
1,412,076 Rubber heel. G. C. Wood, Winthrop, Mass., assignor to Wilds Co., St. Paul, Minn.
1,412,158. Teat cup. M. C. Barden, West Pawlet, Vt.
1,412,492 Pneumatic tire. B. C. Seaton, Nashville, Tenn.
1,412,534 Cushion wheel construction. W. C. Martin, assignor to Martin Cushion Wheel Co.—both of Chicago, Ill.
1,412,535 Pneumatic tire and its manufacture. W. C. Martin, Chicago, Ill.
1,412,601 Tire flap to prevent tube pinching. W. Beaney, New York, N. Y.
1,412,603 Laminated innersole with bottom layer of perforated rubber. A. T. Berry, Wolfeboro, N. H.
1,412,682 Resilient tire. J. A. Gerome, Kitchener, Ontario, Canada.
1,412,691 Exercising apparatus including a pair of rubber balls spaced apart in an elastic casing. C. E. Lincoln, Boston, Mass.
1,412,695 Tire armor with cushion tread. C. Lowry, Chicago, Ill.
1,412,744 Pneumatic tire. J. Hobson and E. E. Gilbert, Colton, Calif.
1,412,800 Parachute. J. F. Cooper and C. H. Zimmerman, assignor to The Goodyear Tire & Rubber Co.—all of Akron, O.
1,412,803 Life preserver with inflatable buoy. A. D. Frantz, assignor of ½-interest to G. B. Conrad—both of Battle Creek, Mich.

Reissues

15,331 Windshield cleaner. J. Demand, New York, N. Y. Original No. 1,370,684, dated March 8, 1921.

Granted April 18, 1922

1,412,930 Fountain pen. J. B. Friedman, San Francisco, Calif.
1,412,975 Syringe. F. W. Stanton, Chicago, Ill.
1,412,976 Syringe. F. W. Stanton, Chicago, Ill.
1,413,003 Hose clamp. J. Chaloupka, Omaha, Nebr.
1,413,078 Resilient tire for automobiles and other vehicles. W. L. von Edelkrantz, Mexico, Mexico.
1,413,166 Cushioned wheel. M. F. Kettler, Pittsburgh, Pa.
1,413,189 Resilient wheel for vehicles. F. L. Rapson, Liverpool, Eng. (Original application divided.)
1,413,190 Resilient wheel for vehicles. F. L. Rapson, Liverpool, Eng. (Granted under the provisions of the act of March 3, 1921, 41 Statute Law, 1313.)
1,413,291 Tire. T. T. Overshiner, Marion, Ind.
1,413,311 Fountain brush. J. Auld, Chicago, Ill.
1,413,320 Fountain comb. G. M. Charles, Washington, D. C.
1,413,384 Fountain hairbrush. H. F. Beyermann, Chicago, Ill.
1,413,476 Fountain pen holder. T. B. Greenlaw, Flora, Ill.
1,413,531 Low pressure tire alarm and gage. W. A. Harris, assignor to The K. S. Conrad Co.—both of Greenville, S. C.

Granted April 25, 1922

1,413,578 Elastic corset. R. Freed, Philadelphia, Pa.
1,413,619 Protective liner for inflatable tires. J. G. Sawicki, Essexville, Mich.
1,413,775 Cap for tire valves. G. F. Powell, assignor of ½-interest to F. D. Score—both of Toronto, Ontario, Can.
1,413,777 Auto tire combined with demountable rim. L. R. Quade, Foley, Minn.
1,413,789 Dilator. V. D. Schaff, Washington, D. C.
1,413,818 Hose clamp. P. H. Wilkinson, Seattle, Wash.
1,413,827 Fountain brush. A. B. Briggs, Denver, Colo.
1,413,834 Rim for pneumatic tires. J. T. Dickinson, Danville, Ill.
1,413,872 Resilient tire. J. H. Perry, Middletown, N. Y.
1,413,893 Fountain pen. F. L. Blackstone, Lindsay, Calif.
1,413,978 Inflatable toy. H. W. Franklin, assignor to J. G. Franklin & Sons, Limited—both of Dalston, London, Eng.
1,414,050 Pneumatic tire covering. E. H. Simonton, Gary, S. D.
1,414,052 Pneumatic automobile wheel. C. W. Smith, Cold Springs, N. Y.
1,414,116 Recoil pad. E. E. Dewhurst, Elyria, O.
1,414,169 Closure for glass bottles for containing chloride of ethyl and other volatile products. J. Bengué, Paris, France. (Granted under the provisions of the act of March 3, 1921, 41 Statute Law, 1313.)
1,414,194 Apparatus for use with respirators for detection of small quantities of carbon monoxide. L. A. Levy, Cricklewood, assignor of ½-interest to R. H. Davis, London—both in Eng. (Granted under the provisions of the act of March 3, 1921, 41 Statute Law, 1313.)
1,414,245 Corset with elastic top. A. Zwiebelson, New York, N. Y.
1,414,252 Cushion tire. W. A. Brubaker, Akron, O.
1,414,321 Brassiere with elastic bands. A. Zwiebelson, New York, N. Y.
1,414,325 Cushion tire. G. W. Bell, Detroit, Mich.
1,414,328 Puncture proof and blowout proof device for pneumatic casings. D. A. Little and E. F. Marcha, assignors to The Paramount Cord Tire Co.—all of Cleveland, O.
1,414,331 Inner tube. H. M. Dodge, Akron, assignor to E. F. Marcha, Cleveland—both in Ohio.

Granted May 2, 1922

1,414,442 Telephone transmitter. L. Steinberger, Brooklyn, N. Y.
1,414,476 Garment supporter. H. W. Lakin, Boston, Mass.
1,414,478 Tire casing filler. W. M. McEwen, Chicago, Ill.
1,414,542 Resilient wheel. F. E. Bessler, Akron, O.
1,414,543 Tire. F. E. Bessler, Akron, O.
1,414,544 Tire. F. E. Bessler, Akron, O., assignor of ½-interest to A. J. Dellenberger.
1,414,559 Tire inflating device. A. A. Ewald, Oakfield, Wis. (Original application divided.)
1,414,578 Windshield cleaner. D. C. Oatman, Buffalo, and F. G. Curvin, Medina, assignors, by direct and mesne assignments, to F. F. Church, Rochester—all in New York.
1,414,640 Rubber collar. T. Hase, San Francisco, Calif.
1,414,710 Battery plate. W. Roberts, assignor of ⅝-interest to F. T. Lahey—both of Akron, O.
1,414,733 Repair patch for pneumatic tires. E. J. Forbes, Revere, Mass.
1,414,752 Hard rubber pencil. J. Salz, assignor, by mesne assignments, to Pencil Products Corporation—both of New York, N. Y.
1,414,834 Hose holder. D. Souter, Baton Rouge, La.
1,414,844 Demountable rim for tires. C. A. Vratil, Pawnee Rock, Kans.

The Dominion of Canada

Granted April 4, 1922

217,419 Demountable rim for tires. J. A. Roby and J. Z. Tondult, coinventors—both of Edmonton, Alberta.
217,455 Flexible caterpillar belt for motor vehicles. A. Kregresse, Paris, France.
217,469 Tire valve. W. E. Rowsome, Belleveille, Ontario.
217,532 Cap for tire valves. A. Schrader's Son, Inc., assignee of M. C. Schweinert—both of New York, New York, U. S. A.

Granted April 25, 1922

217,933 Tire fabric. C. L. Marshall, London, E. C. 4, Eng.
217,958 Bottle stopper. A. G. Sherman, Detroit, Mich, U. S. A.

The United Kingdom

Published April 5, 1922

175,070 Reservoir pens. O. Y. Imray, 30 Southampton Buildings, London; Dunn-Penn Co., Inc., 709 Sixth avenue, New York City, U. S. A.
175,079 Rubber draught and rain excluders for the hinged flaps of motorcycle side cars. C. W. Hayward, Talbot Works, Stewart street, and A. J. Stevens & Co. (1914), Limited, Graiseleys House, Penn Road—both in Wolverhampton.
175,126 Tire valve. F. E. W. Rogers, 1 High street, and C. Dring, 44 Huntington Road—both in Chatteris, Cambridgeshire.

Published April 12, 1922

175,303 Means for inflating tires while running. J. E. Dooley, 99 Park street, Greenheys, Manchester.
175,340 Rubber sole for golf shoes. W. J. Mellersh-Jackson, 28 Southampton Buildings, London; J. H. Stedman, Braintree, Mass., U. S. A.
175,357 Discontinuous inner tube with thickened tapered ends reinforced with harder rubber insertions. M. E. Simes, 14 Forest street, Bendigo, Victoria, Australia.
175,367 Non-sinkable upright floating carrier for transferring mails, etc., between aircraft and ships. W. P. Thompson, 12 Church street, Liverpool; W. Grunow, 44 Walnut street, Newark, New Jersey, U. S. A.
175,374 Rubber dust cap for tire valves. R. B. Matthews, Greater Felcourt, East Grinstead, Surrey.
175,382 Reservoir pens. L. Badois, 212 Boulevard Pereire, Paris, France.
175,408 Sandals or slippers made from rectangular blanks of leather, balata, rubber-coated canvas, or other waterproof material by rounding off the corners at the heel, etc. I. K. Wetrensky, Tatar Bazardjik, Bulgaria.

Chemical Patents will be found on page 614. Machinery Patents on pages 617-618

175,417 Liquid core golf ball. A. E. White, 88 Chancery Lane, London; B. F. Goodrich Co., 1780 Broadway, New York City, U. S. A.
175,447 Tire cover. P. M. Staunton, Aram Lodge, Castlerea, County Roscommon.
175,463 Hair-waver. F. A. Alberghini, 309 West 47th street, New York City, U. S. A.
175,467 Envelope-sealing machine with rubber conveyor band, etc., F. H. Rogers, 181 Queen Victoria street, London; Standard Envelope Sealer Manufacturing Co., Revere Beach Boulevard, Everett, Mass., U. S. A.
175,473 Heel protector applied without nails, etc. W. J. Frith, 6 Dechmont street, Parkhead, Glasgow.
175,522 Double-ended knitting needle, the end for coarse work being of vulcanite. M. B. Robinson, 8 High Holborn, London.
175,569 Golf ball tee with rubber base. E. J. Byrne, 3 Albemarle street, Piccadilly, London.

Published April 20, 1922

175,706 Landing wheels for airplanes. J. V. Martin, 419 Cleveland avenue, Elyria, Ohio, U. S. A.
175,780 Parachute. E. R. Calthrop, Eldon street House, Eldon street, London.
175,781 Tire tread. J. G. Bishop, 130 Amersham Vale, New Cross, London.
175,836 Mud guards for tires. W. Pickard, 36 Weston avenue, Rochdale.
175,921 Metal-studded solid tire. W. K. Fletcher, 19 Crystal Palace Park Road, Sydenham, London.
175,926 Device for teaching cricket having T-shaped arm of rubber covered steel tubing. F. E. Lacey, 22 Elm Tree Road, St. John's Wood, London.
175,950 Buffer straps for loom pickers. H. M. Gusdorf, 302 South Harding street, Indianapolis, Ind., U. S. A. (Not yet accepted.)
175,973 Dust caps for tire valves, etc. A. Schrader's Son, Inc., 470 Vanderbilt avenue, Brooklyn, N. Y., assignee of H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J.—both in U. S. A. (Not yet accepted.)

Published April 26, 1922

175,996 Vulcanite cover plate for securing means of detachable wheels. G. Gonzales de Andia-Yrarrazaval, 6 rue du Commandant Marchant, Paris. (Not yet accepted.)
176,022 Elastic fabric for girdles, brassieres, bandages, etc. E. W. Pattison, 51 Deansgate Arcade, Manchester; Treo Co., Inc., 160 Fifth avenue, New York City, U. S. A.
176,180 Football boot provided with external rubber instep pad. E. H. Smith and E. A. Busby, trading as E. A. Busby & Co., Dover street, Leicester.
176,243 Resilient tire cover having rubber beads and sidewalls reinforced by wire. R. Mercier and J. Boyer, 11 rue Noailles, Marseilles, France.
176,307 Water-bottle stopper. A. Schrader's Son, Inc., 470 Vanderbilt avenue, Brooklyn, N. Y., assignee of H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J.—both in U. S. A.

New Zealand

Published March 9, 1922

45,230 Means for fastening solid tire to wheel rim. D. Maggiora, "Le Fontanelle," Trespiano, Florence, Italy.
45,789 Hose clamp. J. P. Tierney, 376 High street, and E. A. Isaacs, 112 Westbury street—both in St. Kilda, Victoria.
47,102 Vehicle wheel consisting of a disk composed of laminations of canvas or other fabric impregnated with rubber and vulcanized, to which may be vulcanized a rubber non-skid tread. J. Flint, Yarra House, Yarranabbe Road, Darling Point, N. S. W.

Published March 23, 1922

47,264 Inner tube. H. C. Privett, 441 Citizens' National Bank Building, 457 South Spring street, Los Angeles, Calif., U. S. A.

Germany

Patents Issued, with Dates of Issue

352,865 (December 9, 1920) Ring-shaped pessary. Medizinisches Warenhaus Akt.-Ges., Berlin.
352,867 (January 7, 1921) Air cushion. Friedrich Uhlmann, Poststrasse 11, Pirmasens.
353,463 (January 10, 1920) Elastic hollow tire. Max Friedrich, Boschetsriederstrasse 56, and Hermann Debor, Zielstattstrasse 53a, Munich.
353,464 (March 26, 1920) Elastic hollow tire. Max Friedrich, Boschetsriederstrasse 56, and Hermann Debor, Zielstattstrasse 55a, Munich.
353,465 (July 18, 1920) Elastic hollow tire. Max Friedrich, Boschetsriederstrasse 56, and Hermann Debor, Zielstattstrasse 55a, Munich.
353,516 (October 12, 1918) Elastic tire. Josef Prarida, Waltherstrasse 14, Munich.
353,663 (November 8, 1919) Rubber plate for attaching artificial teeth. Alfred Thiele, Potsdamerstrasse 99, Berlin.
353,959 (April 24, 1921) Injection syringe. Dr. Albrecht Meyenberg, Potsdamerstrasse 27b., Berlin.
353,962 (January 29, 1921) Contrivance for inhaling medicine in dust form. Oscar Pfeiffer, Neustadtstrasse, Nordhausen a. H.
354,168 (June 2, 1917) Contrivance for spraying, particularly medicinal liquids. Firma Carl A. Tancré, Wiesbaden.

Design Patents Issued, with Dates of Issue

808,062 (December 12, 1921) Sole composed of leather and rubber parts. Heinrich Ahrens, Lorenzstrasse 28, Hamburg.
808,089 (February 10, 1922) Stuffing-box packing. K. Huth, Hegelstrasse 42, Stuttgart.
808,105 (May 12, 1921) Rupture band without spring. Martin Opel, Mühldorf-on-the-Inn.
808,127 (February 7, 1922) Sanitary bandage. Max Forster, Blasewitzerstrasse 72, Dresden.
808,212 (September 24, 1921) Rubber tire with exchangeable tread, for bicycles and motor vehicles. Fritz Leichensring, Wigandstrasse 14, Leipzig-Kleinzschocher.
808,328 (February 6, 1922) Suspender with silk and cotton elastic plates. Otto Andersch, Bautzener Platz 3, Berlin.
808,549 (February 13, 1922) Heel-tread patch. Renata-Gummi-Gesellschaft G. m. b. H., Dusseldorf.
809,249 (February 14, 1922) Infant's nipple. Karl Werthwein, Gochsen am Kocher.
809,425 (February 20, 1922) Finger bandage. Vulnoplast Fabrik Bonner Kautschukpflaster und Chemisch-Pharmazeutischer Präparate E. Lakemeier, Bonn-on-the-Rhine.
809,472 (February 13, 1922) Rubber sole. Rheinische Gummi-Gesellschaft W. Klotz & Co., Düsseldorf.
809,871 (February 23, 1922) Vaginal syringe rod. Roland-Werk Aktiengesellschaft für Hartgummi Industrie, Berlin-Grunewald.
810,077 (March 1, 1922) Non-slipping device for bicycles and the like. Julius Matzke, Burkhardtswalde-M., Post Weesenstein in Saxony.
810,078 (March 1, 1922) Valve connection for pneumatic tires. Fritz Reuter, 22¾ Gartenstrasse, Kassel.
810,083 (January 2, 1920) Pneumatic tire. Otto Liebherr, Mindersdorf, O. A., Sigmaringen, Hohenzollern.
810,144 (February 28, 1922) Rupture band. Charles Cluthe, Sr., Mainluststrasse 9, Frankfort-on-the-Main.
810,184 (January 30, 1922) Exchangeable rubber heel. Carl Schaller, Bendorf-am-Rhein.
810,288 (February 15, 1922) Rubber bicycle tire. "Orplid" Gummi-Industrie G. m. b. H., Hanover.
810,496 (December 10, 1921) Wheel with pneumatic tire. Fernando Barcena de Andres, Vigo, Spain: represented by Dr. Oskar Arendt, Berlin W. 50.
810,497 (December 10, 1921) Wheel with pneumatic tire. Fernando Barcena de Andres, Vigo, Spain; represented by Dr. Oskar Arendt, Berlin W. 50.
810,498 (December 10, 1921) Wheel with pneumatic tire. Fernando Barcena de Andres, Vigo, Spain; represented by Dr. Oskar Arendt, Berlin W. 50.
810,504 (January 27, 1922) Non-skid device for automobile tires and the like. M. Moldenhauer, Benneckenstein, Harz.
811,334 (January 2, 1922) Pessary. Dr. Karl Lehmann, Roquetteweg 33, Darmstadt.
811,350 (February 21, 1922) Sole protector of rubber. Fritz Breuers, St. Tönis, near Krefeld.
812,176 (March 18, 1922) Heel tread patch of rubber or similar materials. Mittelland Gummewerke Aktiengesellschaft, Hanover-Linden.
812,295 (March 6, 1922) Pneumatic tire armor. Heinrich Zertani and Franz Kolbe, Osterwieck a. H.
812,342 (April 25, 1921) Rubber heel. Otto Maser, Kostritz, near Dresden.
812,392 (March 20, 1922) Protective inlay for rubber covers. Alois Handl, Graf-Adolfstrasse 46, Dusseldorf.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted March 21, 1922, Act of February 20, 1905

153,393 LASTIK—barrels with sheet-rubber linings. American Chemical Paint Co., Philadelphia, Pa.
153,394 VANITY—combs for dressing, ornamenting, and cleaning the hair American Hard Rubber Co., New York, N. Y.
153,409 Outline of a keystone—rubber erasers, etc. Blaisdell Pencil Co., Philadelphia, Pa.
153,420 REDIPOINT—erasers. Brown & Bigelow, St. Paul, Minn.

Act of March 19, 1920, Section 1 (b)

153,607 DEXTER—rubber erasers, fountain pens, etc. Minneapolis Drug Co., Minneapolis, Min.

Renewals

20,789 The letters S W O O O—powdered barytes. Registered March 1, 1892. Gabriel & Schall, New York, N. Y. Renewed March 1, 1922.

Granted March 28, 1922, Act of February 20, 1905

153,642 ALLIED OFFICIAL—golf balls. Allied Golf Co., Chicago Ill.
153,643 ALLIED 162 OFFICIAL—golf balls. Allied Golf Co., Chicago, Ill.
153,646 Stencil design—filters and filter stone made of tripoli. American Tripoli Co., Seneca, Mo.
153,649 EVEREADY—windshield cleaners. Apex Electric Manufacturing Co., Chicago, Ill.
153,704 BABY CAMEL—fountain pens. Dunn-Pen Co., Inc., New York, N. Y.
153,770 AVONA—fountain pens. Jordan Marsh Company, Boston, Mass.

153,802 NAMOGRAPH—machines for stamping names on fountain pens. Modern Inventions Corporation, New York, N. Y.
153,843 ZIP-HI—toy airplanes. The Sail-Me Co., Evanston, Ill.
153,854 SKOTCHEMINT—chewing gum. Short & Son Co., Reading, Pa.
153,878 NOC-OUT—hose clamps. B. A. Tetzlaff, Chicago, Ill.
153,885 TWO STAR preceded and followed by a star—leakproof composition for tires. Two Star Manufacturing Co., Sayville and Brooklyn, N. Y.

Act of March 19, 1920, Section 1 (b)

153,915 BIGGS QUALITY TANKS MADE RIGHT—Always right—tanks, autoclaves, vulcanizing and devulcanizing tanks, etc. The Biggs Boiler Works Co., Akron, O.
153,927 SUPER TREAD—tires. The Gates Rubber Co., Denver, Colo.
153,947 TERRY—masts and blocks for mooring and handling balloons inside or outside of hangars or air domes; collapsible towers for use inside and outside of hangars or air domes for building or repairing balloons. Terry Manufacturing Co., Inc., Jersey City, and Newark, N. J.
153,950 HIGH SIZE with the words TRADE MARK in smaller letters between —tires. United States Tire Co., New York, N. Y.
153,951 WESTINGHOUSE—turbines, condensers, pumps, engines, etc. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

Granted April 4, 1922, Act of February 20, 1905

153,956 Conventionalized representation of a balloon and a pair of wings in silhouette—airships, free balloons, balloon valves and load rings, and pneumatic rafts. The Airship Manufacturing Company of America, Hammondsport, N. Y.
154,021 FAIRBANKS in white letters on an octagonal blue ground, underscored by a white line, and the letters O. K. on a white octagonal panel outlined in blue and located in the blue octagonal panel behind the word "Fairbanks"—gaskets, packing, and washers of rubber fabric or rubber and fabric. The Fairbanks Co., New York, N. Y.
154,025 TIME TO RE-TIRE?—tires, tubes and accessories. The Fisk Rubber Co., Chicopee Falls, Mass.
154,028 FRASER'S VALVE NURSER—nursers combining receptacle and nipple. The Fraser Tablet Co., Brooklyn, N. Y.
154,036 SILVERTOWN—driving belts for automobile fans and other machinery. The B. F. Goodrich Co., New York, N. Y.
154,037 LIFE SAVER with two triangles, one within the other, between the words—tires. M. Greenspan, Chicago, Ill.
154,054 CROW—golf balls. Holmac, Inc., New York, N. Y.
154,055 Representation of a crow in silhouette—golf balls. Holmac, Inc., New York, N. Y.
154,065 Representation of an automobile mirror showing an automobile approaching from behind, and below, the outstretched hand and arm of the driver—brake lining. Johns-Manville Inc., New York, N. Y.
154,092 FLEXYDE—golf-stick grips. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.
154,103 "M. B." on representation of a seal—steam and hydraulic packings of rubber, asbestos, and cotton. Montgomery Bros., Inc., Philadelphia, Pa.
154,120 ADAM ORRIS, facsimile signature—rubber compound to be used as renewable coating for tires. Adam Orris, Mechanicsburg, Pa.
154,127 PERPETUAL—airbags. Perpetual Air Bag Co., Chicago., Ill.
154,145 REDEX—rubber tire patches, reliners, shoes, and vulcanizing kits. Rubber Products & Machinery Co., Los Angeles, Calif.

Act of March 19, 1920, Section 1 (b)

154,203 CLEANEASY—syringes, etc. Meinecke & Co., New York, N. Y.
154,208 RIVOLI—corsets, brassieres, girdles, girdlettes, and hose supporters. Rivoli Rubber & Novelty Co., New York, N. Y.

Granted April 11, 1922, Act of February 20, 1905

154,214 AIRCO—ignition gages with hard rubber barrels. Air Reduction Co., Inc., New York, N. Y.
154,279 KO-KET—elastic veils. Gladstein, Stark & Friedberg, New York, N. Y.
154,407 NAUGAHYDE—traveling bags, brief cases, wallets, music rolls, collar bags, etc. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.
154,408 TRAVEL TEX—brief cases, music rolls, collar bags, etc. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.
154,411 VA-CAR—tires, tubes, and accessories, fan belts, and steam packings. Virginia-Carolina Rubber Co., Inc., Richmond, Va.

Act of March 19, 1920, Section 1 (b)

154,444 RUBBERITE—mineral rubber. Insulating Materials Co., Detroit, Mich.
154,445 SANI-TABLE-TUB—infants' bathtubs. W. J. Jackson, Detroit, Mich.
154,455 TESTRITE—hydrometers, etc. Testrite Instrument Co., New York, N. Y.

Granted April 18, 1922, Act of February 20, 1905

154,464 EASIEFHIT—boots, shoes, and slippers of leather, rubber, fabric or combinations. Abbott Shoe Co., North Reading, Mass.
154,475 RUBBOLASTIC—corsets, brassieres, hose supporters, etc. American Lady Corset Co., Detroit, Mich.
154,493 MARK TWAIN—shoes of leather, canvas, rubber, or combinations. The Bluff City Shoe Co., Hannibal, Mo.
154,494 LOTTA WARE—shoes of leather, canvas, rubber, or combinations. The Bluff City Shoe Co., Hannibal, Mo.
154,514 DIAL superimposed across the representation of a clock dial—shoes and boots of leather, canvas, rubber, etc., for men, women, and children. Churchill & Alden Co., Brockton, Mass.
154,515 Representation of a kangaroo and a label bearing the words, THE EDWIN CLAPP SHOE—shoes of leather, rubber, fabric, and combinations. Edwin Clapp & Son, Inc., East Weymouth, Mass.
154,520 AUNT POLLY'S—leather, rubber and leather, etc, boots, shoes, and slippers. W. B. Coon Co., Rochester, N. Y.
154,525 CUSHCO—rubber soles on canvas uppers. Cushman-Hollis Co., Auburn, Me.
154,531 DOROTHY JUNIOR—men's, women's, and children's boots, shoes, and slippers of leather, rubber, etc. Dorothy Dodd Shoe Co., Boston, Mass.
154,536 BOXTWEB—suspenders. Eagle Suspender & Belt Co., Inc., Philadelphia, Pa.
154,541 TRAVELITE—rubber heels. Emery Rubber Heel Co., Boston, Mass.
154,552 GOLO—footwear of leather, fabric, and combinations with rubber. Golo Slipper Co., New York, N. Y.
154,563 HARRIS BROAD-WAY—garters, Harris Suspender Co., New York, N. Y.
154,574 "A FIT IS THE THING"—boots, shoes, overshoes, slippers, and sandals of rubber, leather, fabric, and combinations. E. L. Hine, Winston-Salem, N. C.
154,576 "DUPLICOAT"—overcoats. Hodgman Rubber Co., Yonkers, N. Y.
154,610 FALESSA—socks and hose supporters, corsets. J. Lindauer, Paris, France.
154,614 OPTIMUS—shoes of leather and rubber. Lord & Taylor, New York, N. Y.
154,633 MARVELTEX—rubber belts for personal wear. The Miller Rubber Co., Akron, O.
154,642 DRI-MAN—raincoats. New York Mackintosh Clothing Co., New York, N. Y.
154,644 NOVELTY SHOE CO., within a double-outlined diamond—shoes of leather, rubber, fabric, and combinations. Novelty Shoe Co., Chicago, Ill.
154,680 PEGGY—women's and children's elastic garters. Samstag & Hilder Bros., New York, N. Y.
154,692 Representation of two tigers tugging at a glove and the words TIGER BRAND TEST OF STRENGTH—gloves of leather, rubber, asbestos, fabric, etc. S. Scilken, New York, N. Y.
154,708 SS conventionally arranged as a monogram—rubber heels. Spokesfield & Sprenger, Inc., San Francisco, Calif.
154,720 UNITED STATES RUBBER CO., ST. LOUIS BRANCH, LILY BRAND, in combination with representation of a frog at edge of a lily pond—waterproof clothing. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.
154,721 ONYX—rubber and fabric boots and shoes. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.
154,722 ARAB—rubber and fabric boots and shoes. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.
154,739 CHINKY CHICK and representation of a Chinaman's head—chewing gum. Sam'l F. Williams, Inc., New York, N. Y.
154,741 AUTOGRAPH—garters. Wilson Brothers, Chicago, Ill.
154,745 "SHOES OF THE HOUR"—leather, rubber, fabric, and combination shoes. Wolock & Bauer, Chicago, Ill.

Act of March 19, 1920, Section 1 (b)

154,754 HENNING—shoes of combinations of fabric and leather with rubber soles. Henning Boot Shop, Inc., New York, N. Y.
154,757 SCAFE LEATHER & RUBBER GOLFING SOLES in combination with representation of a sole and a shoe with the separate plies of the sole separated and marked, respectively, "Leather," "Rubber," etc.,—combination leather and rubber soles and heels for shoes. J. K. Krieg Co., New York, N. Y.
154,762 HANOVER—shoes made of leather, rubber, canvas, and combinations for men, women, and children. Sheppard & Myers Inc., Hanover, Pa.

The Dominion of Canada

Registered

30,666 AERO—rubber sporting goods of all kinds. The Midland Rubber Co., 89 Ryland street, Birmingham, Eng.
30,680 RESEARCH BRAND—Approved by the Research Club inscribed on representation of a tire on a wheel; covering the hub of the wheel the representation of an open book bearing the words AUTOMOTIVE EQUIPMENT INDUSTRY; and below the book the representation of a conventionalized observation instrument—automobile accessories and equipment. Research Club, Inc., Chicago, Ill., U. S. A.
30,691 REDIPOINT—erasers for magazine pencils, etc. Brown & Bigelow, Limited, Saulte Ste. Marie, Ont.
30,723 CURRIE—garters, suspenders, armbands, etc. E. & S. Currie, Limited, Toronto, Ont.
30,752 FLEXICORD—tires. The India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, Eng.
30,753 HYPO-UNIT—syringes. H. K. Mulford Co., Philadelphia, Pa., U. S. A.
30,757 CONKLIN—fountain pens. The Conklin Pen Manufacturing Co., Toledo, Ohio, U. S. A.
30,795 RUBBEROLEUM—flooring, tiling, matting, mats, stair treads, and other floor covering formed wholly or partly of rubber. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ont.
40,801 B. L. T. PRESERVES LIFE OF RUBBER—chemical compound for treating rubber and manufactured rubber. Rubber Process Corporation, Detroit, Mich.

The United Kingdom

Published March 15, 1922

418,795 SIRIUS—plantation rubber rolling machinery. The Cherry Tree Machine Co., Limited, The Foundry, Green Lane, Cherry Tree, near Blackburn, Lancashire.
420,024 Three stripes of purple and two of white, alternating, as illustrated in application—hose included in Class No. 50. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancashire.
420,458 GOLFMETER—captive device for playing and practice of golf. Craig Golfmeter Co., 590 Howard street, San Francisco, California, U. S. A.; address in United Kingdom, care of Boult, Wade & Tennant, 112 Hatton Garden, London, E. C. 1.
B421,013 "Novo"—game balls. J. & H. Harrison, Limited, 69 Grey street, Newcastle-upon-Tyne.

421,024 PARACRETE—manufactures from mineral and other substances including rubber, for road making, flooring and paving. Plantation Rubber Manufacturing Co., Limited, 14 Mincing Lane, London, E. C. 3.

421,086 EEESLITACH—rubber soles and heels sold separately from boots and shoes. Chas, Macintosh & Co., Limited, 2 Cambridge street, Manchester, Lancashire.

Published March 22, 1922

418,468 CLUB in white letters on club spot in silhouette—rubber solution, patches, repair bands and patching material for tires. E. F. Munday, trading as The Silico Enamel Co., Crayford Mills, Warton Road, Stratford, London, E. 15.

418,469 CLUB in white letters on club spot in silhouette—repair outfits and composition for tires, included in Class No. 50. E. F. Munday, trading as The Silico Enamel Co., Crayford Mills, Warton Road, Stratford, London, E. 15.

421,072 Representation of a golf ball with airplane wings attached—golf balls. The Beldam Tyre Co. (1920) Limited, Windmill Road, Brentford, Middlesex.

421,769 CLIPPER on conventional representation of a tire framing picture of a clipper—rubber and gutta percha goods not included in classes other than No. 40. The Clipper Tyre Co., Limited, Dunlop House, 1 Albany street, Regent's Park, London, N. W. 1.

Published March 29, 1922

420,732 RUBBERMAX—plastic rubber compounds, included in Class No. 40, for repairing pneumatic and solid tires and molded rubber goods. C. L. Cuthbe, trading as Chas. L. Cuthbe & Co., 37 Great Eastern street, London, E. C. 2.

421,016 "WILMAR" WEATHERPROOFS AND RUBBERPROOFS against background representing a shower with sun shining through clouds—showerproof and waterproof clothing, included in Class No. 38. Wilks & Markson, Limited, 17 Atkinson street, Deansgate, Manchester.

Published April 5, 1922

412,744 Representation of two elephants tugging at piece of elastic, braced on opposite sides of a globe bearing the initials A. W. M. E. C. arranged as a monogram—elastic webbing made principally of rubber. American Webbing Manufacturers' Export Corporation, 395 Broadway, New York City, U. S. A.; address in United Kingdom, care of A. L. Mond, 19 Southampton Buildings, Chancery Lane, London, W. C. 2.

B412,794 SILVERTOWN—electrical devices, porous pots for Leclanché cells, portable testing sets for cables, etc. India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, E. C. 4; and Winchester street, Silvertown, London, E. 16.

B412,795 SILVERTOWN—tiles, buffers, hot-water bottles, tires and tubes, hydrant ball valves, insulation gloves, motorcycle driving belts and drawbar cradle springs, all being rubber goods not included in classes other than No. 40, and balata machine belting. India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, E. C. 4; and Winchester street, Silvertown, London, E. 16.

423,032 HARDITE—all goods included in Class No. 40. The Longclose Engineering Co., Limited, 41 Bowman Lane, Leeds.

Published April 12, 1922

420,796 ARMOURITE—puncture-closing powder for pneumatic tires. J. A. Burgess and R. Birks, copartners, 26 Stanley Road, East Sheen, London, S. W. 14.

422,028 BILLY—tobacco pipes and cigar and cigarette holders included in Class No. 50. F. E. V. Beanes, Falcon Works, Wallis Road, Hackney Wick, London, E. 9.

422,202 THERMOZOTE—rubber and gutta percha goods not included in classes other than No. 40. C. L. Marshall, "Dunoon," Doyle Gardens, Harlesden, London, N. W. 10.

422,413 "STOMOS"—insulated electric cable. Fullers United Electric Works Limited, Woodland Works, Grove Road, Chadwell Heath, Essex.

422,595 AMPOROS—charged porous pots for primary batteries. The India Rubber, Gutta Percha & Telegraph Works Co., Limited, 106 Cannon street, London, E. C. 4; and Winchester street, Silvertown, London, E. 16.

422,760 ASTRAL—fountain pens. H. Williamson Limited, 77-81 Farrington Road, London, E. C. 1.

422,836 SILENTIA—rubber tiles. The India-Rubber Flooring Co., Limited, 37 Great Eastern street, London, E. C. 2.

422,966 Representation of a girl with arms outstretched, sitting on top of a tire in which a nail is sticking—rubber mechanical puncture sealing inner tubes for pneumatic tires. The Jeff Patent Tube Limited, 210 Strand, London, W. C. 2.

423,212 PARXOL—rubber boot protectors. J. G. Franklin & Sons, Limited, 17 Colvestone Crescent, Dalston, London, E. 8.

423,237 Representation of a Brownie-type grotesque figure—rubber inner tube for pneumatic motor and cycle tires. The Jeff Patent Tube Limited, 210 Strand, London, W. C. 2.

Published April 19, 1922

418,628 NEVADRI in combination with conventional arrangements of balls—rubber cleaners for golf balls. W. M. Jenkins, 11 Great Marlborough street, London, W. 1.

421,706 TRETORN—galoshes, snow boots, bootees, gymnastic and sailors' shoes. Halsingborgs Gummifabriks Aktiebolag, Furutorpsgatan, Kvarteret Esculap, 1, 2, 14-17, Hälsingborg, Sweden; address in United Kingdom, care of Abel & Imray, 30 Southampton Buildings, London, W. C. 2.

421,707 TRETORN—rubber game balls and toys included in Class No. 49. Hälsingborgs Gummifabriks Aktiebolag, Furutorpsgatan, Kvarteret Esculap, 1, 2, 14-17, Hälsingborg, Sweden; address in United Kingdom, care of Abel & Imray, 30 Southampton Buildings, London, W. C. 2.

422,173 LIONEL BRAND formed by letter L bearing the letters IONEL BRAND, framing head and mane of a lion—surgical rubber goods and druggists' sundries not included in classes other than No. 11. L. A. Jackson, trading as The London Rubber Co., 183 Aldersgate street, London, E. C. 1.

New Zealand

Published March 9, 1922

18,610 RUBAX—rubber and gutta percha goods not included in classes other than Class No. 40. Barnet Glass Rubber Co., Limited, 289-293 Swanson street, Melbourne, Victoria, Australia.

18,712 DICK'S ORIGINAL BALATA, GUTTA PERCHA & CANVAS BELTING and TRADE MARK, arranged in combination with conventionalized roll of belting—machinery belting of cotton and balata or gutta percha. R. & J. Dick, Limited, 3 McPhail street, Greenhead, Glasgow, Scotland.

Published April 6, 1922

18,583 SEAL BRAND and a monogram within a seal in combination with representation of a seal bearing picture of a seal against polar background—rubber and gutta percha goods not included in classes other than No. 40. H. Seal & Co., Limited, Redcross street, Leicester, Eng.

18,630 SILVERTOWN—hose and packing. The India Rubber, Gutta Percha, & Telegraph Works Co., Limited, 106 Cannon street, London, Eng.

18,659 Three red and two white stripes, alternating—hose. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancaster, Eng.

18,660 Red and blue stripes and lines as illustrated in application—hose. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancaster, Eng.

18,661 Red and blue wavy stripes and lines as illustrated in application—hose. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancaster, Eng.

18,662 Red and blue stripes and lines as illustrated in application—hose. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancaster, Eng.

Designs

The United States

Patented April 4, 1922

60,748 Tire tread. Term 14 years. A. H. Clark, Plainfield, N. J.

60,753 Tire tread. Term 3½ years. L. H. Lightfoot, Signal Mountain, assignor to Du Bois Rubber & Tube Co., Chattanooga—both in Tenn.

Patented April 11, 1922

60,785 Rubber bathing slipper. Term 7 years. J. C. Evans, assignor to The American Rubber & Tire Co.—both of Akron, O.

60,810 Rubber sole pad for boots and shoes. Term 14 years. W. W. Phillips, London, Eng.

60,811 Doll. Term 14 years. J. M. Pratt, Winnipeg, Man., Can.

60,814 Toy spotted balloon. Term 14 years. E. T. Richert, Akron, O.

Patented April 18, 1922

60,853 Tire tread. Term 14 years. W. R. Denman, Cleveland, O.

Patented April 25, 1922

60,908 Toy balloon. Term 3½ years. J. O. Karpen, Nutley, N. J.

Patented May 2, 1922

60,926 Tire. Term 7 years. A. A. Glidden, Watertown, and E. O. Fritch, Belmont, assignors to Hood Rubber Co., Watertown—both in Mass.

60,748 60,753 60,853 60,926 60,927

60,927 Tire tread. Term 3½ years. R. W. Hutchens, Eau Claire, Wis., and S. P. Woodard, New York, N. Y., assignors to Stanwood Rubber Co., Newark, N. J.

The Dominion of Canada

Registered

5,361 Tire tread. Patented March 27, 1922. The Kaufman Rubber Co., Limited, Kitchener, Ont.

5,362 Tire tread. Patented March 27, 1922. The Kaufman Rubber Co., Limited, Kitchener, Ont.

5,382 Sole pads for footwear. Patented March 31, 1922. R. R. Jarvis, Ottawa, Ont.

5,393 Rubber heel. Ames Holden McCready Limited, Montreal, Que.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURES—H. C. Pearson's "Crude Rubber and Compounding Ingredients," also "Rubber Machinery."

Review of the Crude Rubber Market

New York

THE spot price for plantation rubber has slowly declined for the entire month. There was notable lack of factory interest and the market sagged steadily in consequence.

The outlook generally continued poor and prices drifted steadily downward until the 24th of the month when a new break occurred and New York spot sold for factory account in small quantities with fair activity, at 14 for slightly moldy, and 14½ to 15 for prime for July-September. Some factories are looking for prices to fall as low as 13 to 13½ cents. Stocks in London are estimated at about 69,000 tons and there are large stocks in New York. Unless consumption for the next quarter increases very much more than the present rate, prices may be expected to remain depressed.

Brown crêpe seems to be somewhat scarce and in fair demand at about 1 to 1½ cents under ribs. Balata held rather firm with few inquiries.

Importations of all grades during April were 93,986 tons, compared with 54,503 tons for April one year ago. Plantation arrivals for April were 89,665 tons compared with 49,834 tons for April one year ago.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATIONS. May 1. Spot, first latex crêpe, 16-16¼ cents; May-June, 16¼ cents; July-September, 17-17¼ cents; October-December, 18-18¼ cents. May 25. Spot, first latex crêpe, 14¼-14½ cents; June-July, 14½ cents; July-September, 15 cents; October-December, 15¾ cents.

May 1. Spot, ribbed smoked sheets, 16-16¼ cents; May-June, 16¼ cents; July-September, 17-17¼ cents; October-December, 18-18¼ cents. May 25. Spot, ribbed smoked sheets, 14¼-14½ cents; June-July, 14½ cents; July-September, 15 cents; October-December, 15½ cents.

May 1. Spot, No. 1 amber crêpe, 16 cents; May-June, 16¼ cents; July-September, 16½ cents. May 25. Spot, No. 1 amber crêpe, 14 cents; June-July, 14¼ cents; July-September, 14¾ cents.

May 1. Spot, No. 1 rolled brown crêpe, 13¼ cents; May-June, 13¼ cents; July-September, 14 cents. May 25. Spot, No. 1 rolled brown crêpe, 10¾ cents; June-July, 10¾ cents; July-September, 11½ cents.

SOUTH AMERICAN PARÁS AND CAUCHO. May 1. Spot, up river fine, 19 cents; islands fine, 17½ cents; upriver coarse, 13½ cents; islands coarse, 9-9½ cents; Cametá, 10 cents; caucho ball, 12¾-13 cents. May 25. Spot, upriver fine, 18 cents; islands fine, 17¼ cents; upriver coarse, 13¼ cents; islands coarse, 8½ cents; Cametá, 9 cents; caucho ball, 13¾-14 cents.

London

About a month ago some large buying operations commenced making things look brighter and raising prices slightly. March output crop returns were disappointing. Manufacturers failed to come into the market. It has been semiofficially published that the Dutch Government will not join in any combination scheme, as their producers hope to compete successfully at present values.

Around the middle of the month the market weakened and spot ribs dropped to 7⅞*d.* in view of the absence of factory buying interest.

New York Quotations

Following are the New York spot quotations, for one year and one month ago, and May 25, the current date:

Plantation Hevea	June 1, 1921	May 1, 1922	May 25, 1922
CREPE			
First latex	$0.17 @	$0.16¼ @ .16½	$0.14½ @
Off latex	.15 @ .15½	.16 @	.14 @
Amber No 1	.13 @	.16 @	.14¼ @
Amber No. 2	.12 @	.15½ @	.14 @
Amber No. 3	.11 @	.15 @	.13½ @
Brown, thick, thin	.12½ @	.15 @	.13¾ @
Brown, specky	.11 @	.14½ @	.12 @
Brown, rolled	.10 @ .10½	.13 @	.10¾ @
SHEET			
Smoked, ribbed	.14½ @	.16¼ @ .16½	.14½ @
Smoked, plain	.13 @	.15½ @	.14 @
Unsmoked	.12 @	.15 @	.13½ @
Colombo scrap No. 1	@	.13½ @	.11½ @
Colombo scrap No. 2	@	.11½ @	.10½ @
East Indian			
PONTIANAK			
Banjermassin	.06½ @	.08 @	.07½ @
Palembang	.07½ @	.09 @	.08 @
Presser block	.11½ @	.13¼ @	.12 @
Sarawak	.05¾ @	.06½ @	.06 @
South American			
PARAS			
Upriver, fine	.16½ @ .17	.19 @	.18¼ @
Upriver, medium	.13½ @ .14	.17 @	.17 @
Upriver, coarse	.08½ @ .08¾	.14 @	.12½ @
Upriver, weak, fine	.13 @	.16 @	.15 @
Islands, fine	.18½ @ .19	.17½ @ .18	.17 @
Islands, medium	.14 @ .15	@	.15 @
Islands, coarse	.09 @ .09½	.09½ @ .10	.08½ @
Cametá	.08½ @	.10 @	.09 @
Acre Bolivian, fine	.17 @ .18½	.19¼ @ .19½	.18⅜ @
Beni Bolivian	@	.19½ @ .20	.19 @
Madeira, fine	.19 @ .20	.20 @ .21	.18½ @
Peruvian, fine	.16½ @ .17	.17 @ .18	.17¼ @
Tapajos, fine	.16½ @ .17	.17 @	.17½ @
PARAS—Washed and Dried			
(Shipment from Brazil)			
Acre Bolivian, fine	@	.32 @	.30 @
Islands, fine	@	.31 @	.29 @
Upriver, fine	@	.32 @	.30 @
Upper caucho ball	@	.19 @	.19 @
Cametá	@	.21 @	.20 @

CAUCHO	June 1, 1921	May 1, 1922	May 25, 1922
Upper caucho ball	$0.10¾ @ .11½	$0.14 @	$0.13 @
Lower caucho ball	.09½ @ .10	.12 @	.11 @
Maniçobas			
Ceará negro heads	.12 @	*.10 @	.09 @
Ceará scrap	.06 @	*.09 @	.08 @
Maniçoba 30% guaranty	.11 @	*.07 @	.07 @
Mangabeira, thin sheet	.13 @	*.12 @	.10 @
Centrals			
Central scrap	.10 @ .11	.08 @ .09	.08 @ .09
Central scrap and strip	.06 @ .07	.07 @ .08	.06 @ .07
Central wet sheet	.04 @	.04 @ .05	.03 @ .04
Corinto scrap	.11 @ .11½	.08 @ .09	.08 @ .09
Esmeralda sausage	.11 @ .12	.08 @ .09	.08 @ .09
Guayule, 20% guaranty	@	@	@
Guayule washed and dried	.26 @	.26 @	.26 @
Africans			
Benguela, No. 1, 28½%.	.08 @	*.08½ @	.08½ @
Benguela, No. 2, 32½%.	@	*.07 @	.08 @
Conakry niggers	@	*.16½ @	@
Congo prime, black upper	@	.14 @	.15 @
Congo prime, red upper	@	.12¼ @	.12 @
Kassai, black	@	*.13½ @	@
red	@	.12 @	.11½ @
Massai sheets and strings	@	*.16 @ .17	@
Niger flake, prime	.13½ @	@	@
Rio Nunez ball	@	@	.17¾ @
Rio Nunez sheets, strings	@	*17½ @	@
Gutta Percha			
Gutta Siak	.13¾ @ .15	.17½ @ .18	.15 @ .17
Red macassar	2.30 @ 2.65	2.85 @ 3.50	2.85 @ 3.00
Balata			
Block, Ciudad, Bolivar	.53 @	.50 @ .51	.48 @ .50
Colombian	.43 @	.40 @ .42	.40 @ .42
Panama	.43 @	.35 @ .40	.25 @ .35
Surinam sheet	.74 @	.64 @ .66	.65 @ .68
amber	.81 @	.70 @ .72	.70 @ .72

*Nominal.

Reclaimed Rubber

The revival of manufacturing in important branches of the rubber industry has not developed the demand for their stocks that reclaimers hoped for. This is partly due to the continued decline in prices for crude rubber and also to the cautions hand to mouth buying policy of manufacturers who, in view of recent past experience, are limiting their purchases of all supplies to actual 30 to 60-day needs. Reclaimers continue production on about 25 to 30 per cent of capacity.

New York Quotations

MAY 25, 1922

Prices subject to change without notice

STANDARD RECLAIMS			
Floating	$0.12	@	$0.13
Friction	.12	@	.13
Mechanical	.08	@	.10
Shoe	.10¼	@	.10¾
Tires, auto	.09	@	.10
truck	.09	@	.10
White	.13	@	.14

Comparative Low and High New York Spot Rubber Prices

	May 1922*		May 1921		May 1920	
PLANTATIONS						
First latex crêpe	$0.14½@$0.16½		$0.17½@$0.19¼		$0.38	@$0.43¼
Smoked sheet, ribbed	.14½@	.16½	.15½@	.17½	.38	@ .43
PARAS						
Upriver, fine	.18 @	.18¾	.16½@	.18½	.39	@ .41¼
Upriver, coarse	.12½@	.13¾	.08¾@	.09½	.29½@	.30½
Islands, fine	.17 @	.18½	.17½@	.18	.40	@ .41½
Islands, coarse	.08½@	....	.09 @	.12	.21	@ ....
Cametá	.09 @	.09¾	.08½@	.11	.22	@ .23

*Figured to May 24, 1922.

Singapore Rubber Market

GUTHRIE & CO., Limited, Singapore, reports under date of April 6, 1922:

Although business was somewhat curtailed by the recent holidays, the general tone of the market has been steady. The auctions opened yesterday to a firm market and, with a smaller quantity of rubber on offer, demand was keen.

Standard sheets at 27/27½ cents, improved ½-cent, but sellers withdrew the bulk of this grade for private disposal. Good F. A. Q. and off sheet remained steady at previous values. Pale crêpes show no change, but average lots were firmer, owing to short supplies. Palish crêpes were again in good request. Lower grade crêpes advanced ½-cent. Of 573 tons catalogd, 417 tons changed hands.

The following is the course of values:

	In Singapore per Pound	Sterling Equivalent per Pound in London
Sheet, fine ribbed smoked	27 @ 27½	—/ 8½ @ —/ 8¾
Sheet, good F. A. Q.	25½ @ 26½	—/ 8⅛ @ —/ 8⅜
Sheet, off quality	22 @ 25	—/ 7⅛ @ —/ 8
Crêpe, fine pale	25½ @ 26½	—/ 8⅝ @ —/ 8⅞
Crêpe, good pale	24½ @ 25	—/ 8⅜ @ —/ 8½
Crêpe, off quality	23½ @ 24½	—/ 8⅞ @ —/ 8⅜
Crêpe, fine brown	22 @ 24	—/ 7⅜ @ —/ 8¼
Crêpe, good brown	21 @ 23½	—/ 7⅜ @ —/ 8⅛
Crêpe, dark brown	18 @ 21½	—/ 6½ @ —/ 7½
Crêpe, bark	17½ @ 20½	—/ 6⅜ @ —/ 7¼

Amsterdam Rubber Market

JOOSTEN & JANSSEN, Amsterdam, report under date of May 5, 1922:

The market has been dull throughout this week, and prices gave way a little. In the terminal market, hardly any business resulted, and only a few spot lots of various grades changed hands. Sheets were not for sale. The close is dull at following prices:

Hevea crêpe, Fl. 44.	Sheets, Fl. 45 spot.
Hevea crêpe, Fl. 46½.	Sheets, Fl. 47 July to September.
Hevea crêpe, Fl. 48.	Sheets, Fl. 48 October to December.
Hevea crêpe, Fl. 49½.	Sheets, Fl. 50 January to March.

Exports of Crude Rubber from Pará and Manáos, Brazil, to the United States and Europe

Grades	February, 1922: To United States Pounds	To Europe Pounds
From Pará		
Fine	714,729	740.005
Medium	35,805	35,371
Coarse	291,014	33,369
Caucho	447,194	244,924
Totals	1,488,742	1,053,669
From Manáos:		
Fine	744,794	1,426,102
Medium	96,620	146,292
Coarse	256,159	96,397
Caucho	145,297	47,906
Totals	1,242,870	1,716,697
Total exports, February, 1922	2,731,612	2,770,366

Grand total during February, 1922 ..... *pounds* 5,501,978
Grand total during February, 1921 4,240,179

Increase during February, 1922 ..... *pounds* 1,261,799

No exports of rubber from Itacoatiara, Brazil, and Iquitos, Peru, during the month of February, 1922, whereas the figures for February, 1921, include 60,586 pounds of rubber shipped from Itacoatiara, and 19,053 pounds shipped from Iquitos.

Rubber Division, Bureau of Foreign & Domestic Commerce, Washington, D. C.

Plantation Rubber Exports from Java*

	January 1921	January 1922	February 1921	February 1922
To Netherlands ..... *kilos*	753,000	188,000	783,000	322,000
Great Britain	1,036,000	337,000	787,000	428,000
Germany	47,000	22,000	15,000	13,000
United States	510,000	1,675,000	654,000	807,000
Singapore	359,000	203,000	272,000	364,000
Japan	.....	23,000	43,000	37,000
Australia	138,000	.....	64,000	.....
Italy	.....	.....	.....	7,000
Other countries	.....	.....	6,000	.....
Totals ..... *kilos*	2,843,000	2,448,000	2,624,000	1,978,000
Ports of origin:				
Tandjong Priok ..... *kilos*	1,763,000	1,314,000	1,024,000	734,000
Samarang	33.000	1,036,000	20,000	12,000
Soerabaja	1,021,000	26,000	1,338,000	1,116,000

*The January figures are verified.

British Malaya Rubber Exports

An official cablegram from Singapore states that the exports of rubber from British Malaya in the month of March amounted to 43,241,800 lbs. (19,304 tons) as compared with 44,874,200 pounds (20,033 tons) in February and 42,474,800 pounds (18,962 tons) in January. Transhipments in March amounted to 5,135,600 pounds (2,293 tons).

New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND

	April, 1922: 17	18	19	20	21	22	24	25	26	27	28	29	May, 1922: 1	2	3	4	5	6	8	9	10	11	12	13
PLANTATIONS																								
Sheet																								
Ribbed smoked	16⅝	16⅜	16⅛	16⅛	16⅝	16⅝	16⅜	16⅛	16⅜	16⅛	16⅛	16⅛	16⅛	16⅛	16⅛	15⅞	15⅞	15⅞	15⅞	15⅞	15⅞	15⅜	15⅜	15⅜
Crêpe																								
First latex	16⅝	16⅜	16⅛	16⅛	16⅝	16⅝	16⅜	16⅛	16⅜	16⅛	16⅛	16⅛	16⅛	16⅛	16⅛	15⅞	15⅞	15⅞	15⅞	15⅞	15⅞	15⅜	15⅜	15⅜
Off latex	15⅞	15⅞	15¾	15¾	16⅛	16⅛	15⅞	15¾	15¾	15¾	15¾	15¾	15¾	15⅝	15¾	15½	15½	15½	15½	15¼	15¼	15⅛	15⅛	15⅛
No. 1 blanket	15¾	15⅞	15⅝	15½	16⅛	16⅛	15⅞	15¾	15¾	15⅝	15⅜	15¾	16	15½	15¾	15⅝	15⅜	15⅜	15⅝	15⅝	15⅜	15¼	15¼	15¼
No. 2 blanket	15¼	15¾	15¼	15	15⅝	15⅝	15⅜	15¼	15¼	15¼	15¼	15¼	15⅛	15	15¼	15⅛	14¾	14¾	15¼	15⅛	15⅛	14¾	14¾	14¾
No. 3 blanket	14¾	14¾	14⅝	14⅝	15⅛	15⅛	15⅛	14⅞	14¾	14⅝	14⅞	14⅝	14⅝	14¾	14¾	14⅞	14⅜	14⅜	14¾	14¾	14⅝	14¼	14¼	14¼
Thin, clean, brown	15¼	15	14¾	14½	14¾	14¾	14¾	14¾	14¾	14¾	14⅞	14¾	14¾	14¾	15	14¾	14⅝	14⅝	14⅜	14¾	14¾	14¾	14½	14½
Specky brown	14¾	14½	14¼	14¼	14⅜	14⅜	14⅜	14⅛	14¼	14¼	14¼	14⅛	14¼	14¼	13¾	14	14⅛	14⅛	13⅞	14¼	14	14	14	14
Rolled brown	13⅜	13⅜	13½	13½	13¾	13¾	13⅜	13¼	13¼	13⅜	13⅛	13⅛	13	12¾	12⅞	12⅞	12⅝	12⅝	12⅝	12⅝	12⅜	12⅛	12⅛	12⅛

Crude Rubber Arrivals at New York as Stated by Ships' Manifests

Parás and Caucho

	Fine	Medium	Coarse	Caucho	Total Pounds
APRIL 23. By "Denis," Pará.					
Poel & Kelly, Inc.	111,762	.....	.....	.....	111,762
Various	.....	.....	.....	.....	1,061
APRIL 24. By "Socrates," Pará.					
H. A. Astlett & Co.	56,000	22,400	.....	.....	78,400
Paul Bertuch	105,455	.....	.....	.....	105,455
L. Littlejohn & Co., Inc.	25,227	.....	.....	.....	25,227
MAY 1. By "Dunstan," Pará.					
Paul Bertuch	23,605	.....	95,900	.....	119,505
L. Littlejohn & Co., Inc.	312,839	.....	.....	.....	312,839
Meyer & Brown, Inc.	.....	.....	.....	.....	44,800
Poel & Kelly, Inc.	20,228	.....	11,340	.....	31,568
Fred Stern & Co., Inc.	.....	.....	19,096	.....	19,096
Various	.....	.....	.....	.....	131,911
MAY 11. By "Dominic," Pará.					
Paul Bertuch	130,911	.....	.....	.....	130,911
L. Littlejohn & Co., Inc.	171,990	.....	.....	.....	171,990
Meyer & Brown, Inc.	.....	.....	.....	.....	22,400
Poel & Kelly, Inc.	56,088	.....	.....	.....	90,052
Fred Stern & Co., Inc.	2,383	.....	20,777	.....	23,160
MAY 15. By "Bronte," Pará.					
Paul Bertuch	.....	.....	87,360	.....	87,360
General Rubber Co.	.....	.....	.....	.....	‡56,000
Various	.....	.....	.....	.....	202,562

‡Cameta.

Plantations

(Figured at 180 lbs. net to the bale or case.)

	Pounds	Totals
APRIL 18. By "Westerdijk," Rotterdam.		
Various	.....	94,860
APRIL 21. By "Valencia," Colombo.		
Meyer & Brown, Inc.	78,400	
Poel & Kelly, Inc.	111,930	
Fred Stern & Co., Inc.	4,480	
General Rubber Co.	257,600	
Various	229,250	681,660
APRIL 22. By "Keemun," Far East.		
H. A. Astlett & Co.	168,000	
F. R. Henderson & Co., Inc.	796,000	
Hood Rubber Co.	56,000	
Hood Rubber Co.	*67,200	
L. Littlejohn & Co., Inc.	2,172,800	
Meyer & Brown, Inc.	459,200	
Poel & Kelly, Inc.	331,550	
Baird Rubber & Trading Co., Inc.	89,600	
J. T. Johnstone & Co., Inc.	313,420	
Chas. T. Wilson Co., Inc.	38,080	
Fred Stern & Co., Inc.	361,012	
Continental Rubber Co. of New York	67,200	
General Rubber Co.	1,970,068	
William H. Stiles & Co.	392,000	
H. Muehlstein & Co.	61,684	
Various	3,502,676	10,846,420
APRIL 23. By "Vasconia," London.		
L. Littlejohn & Co., Inc.	.....	2,160
APRIL 25. By "Havana," Far East.		
Baring Bros.	48,060	
W. R. Grace & Co.	61,200	
L. Littlejohn & Co., Inc.	89,760	
Poel & Kelly, Inc.	1,495,160	
Fred Stern & Co., Inc.	56,100	
Various	130,000	1,880,280
APRIL 25. By "Slavic Prince," London.		
L. Littlejohn & Co., Inc.	.....	448,000
APRIL 26. By "Soerakarta," Far East.		
H. A. Astlett & Co.	67,200	
F. R. Henderson & Co., Inc.	51,200	
L. Littlejohn & Co., Inc.	336,000	
Poel & Kelly, Inc.	161,000	
Chas. T. Wilson Co., Inc.	11,200	
Fred Stern & Co., Inc.	69,921	
William H. Stiles & Co.	29,120	
H. Muehlstein & Co.	42,820	
Various	430,099	1,198,560
APRIL 28. By "Kurnerica," Colombo.		
Hood Rubber Co.	*44,800	
F. R. Henderson & Co., Inc.	33,600	
Adolph Hirsch & Co., Inc.	11,200	
L. Littlejohn & Co., Inc.	448,000	
Poel & Kelly, Inc.	75,015	
Chas. T. Wilson Co., Inc.	26,880	
Fred Stern & Co., Inc.	58,240	
General Rubber Co.	276,640	
H. Muehlstein & Co.	56,000	
Various	388,745	1,419,120
APRIL 28. By "Sutton Hall," Far East.		
Alden's Successors, Inc.	11,200	
Baring Bros.	26,640	
Hood Rubber Co.	33,600	
H. A. Astlett & Co.	324,800	
F. R. Henderson & Co., Inc.	44,800	
Adolph Hirsch & Co., Inc.	22,400	
L. Littlejohn & Co., Inc.	819,840	
Meyer & Brown, Inc.	*12,000	
Poel & Kelly, Inc.	24,640	
William H. Stiles & Co.	†00,800	
Baird Rubber & Trading Co., Inc.	†97,942	
J. G. Johnstone & Co., Inc.	641,412	
Chas. T. Wilson Co., Inc.	168,900	
Fred Stern & Co., Inc.	75 153	
General Rubber Co.	336 000	
H. Muehlstein & Co.	131,040	
Various	1,52†,533	4,591,800

*Arrived at Boston.

	Pounds	Totals
APRIL 30. By "Hawaiian," Hamburg.		
Haber Bros.	.....	900
MAY 1. By "Robert Dollar," Far East.		
F. R. Henderson & Co., Inc.	255,200	
Hood Rubber Co.	67,200	
Firestone Tire & Rubber Co.	340,920	
L. Littlejohn & Co., Inc.	340,800	
Meyer & Brown, Inc.	44,800	
Baird Rubber & Trading Co., Inc.	112,000	
Poel & Kelly, Inc.	204,916	
Chas. T. Wilson Co., Inc.	78,400	
Fred Stern & Co., Inc.	24,640	
General Rubber Co.	33,600	
William H. Stiles & Co.	59,360	
H. Muehlstein & Co.	145,600	
Various	1,638,584	3,346,020
MAY 3. By "Boeton," Colombo.		
H. A. Astlett & Co.	44,800	
Baring Bros.	26,100	
Eastern Rubber Co.	62,280	
General Rubber Co.	418,460	
Manhattan Rubber Mfg. Co.	40,320	
F. R. Henderson & Co., Inc.	89,600	
L. Littlejohn & Co., Inc.	369,600	
Meyer & Brown, Inc.	53,760	
Poel & Kelly, Inc.	283,645	
Fred Stern & Co., Inc.	46,737	
H. Muehlstein & Co.	28,000	
Various	564,938	2,028,240
MAY 7. By "Clan Mackay," Colombo.		
Adolph Hirsch & Co., Inc.	33,600	
L. Littlejohn & Co., Inc.	156,800	
Poel & Kelly, Inc.	62,800	
Chas. T. Wilson & Co., Inc.	73,920	
Fred Stern & Co., Inc.	87,360	
Various	96,540	511,020
MAY 7. By "Hoosac," London.		
Various	.....	1,080
MAY 8. By "Mayaro," Far East.		
Middleton & Co., Limited	.....	572
MAY 8. By "Dakarian," London.		
Fred Stern & Co., Inc.	28,325	
Various	24,775	53,100
MAY 10. By "Old North Star," London.		
Various	.....	78,120
MAY 11. By "Ningchow," Far East.		
H. A. Astlett & Co.	145,600	
Hood Rubber Co.	56,000	
Adolph Hirsch & Co., Inc.	56,000	
L. Littlejohn & Co., Inc.	918,400	
Meyer & Brown, Inc.	560,000	
Baird Rubber & Trading Co., Inc.	395,360	
J. F. Johnstone & Co., Inc.	196,862	
Poel & Kelly, Inc.	414,400	
Chas. T. Wilson & Co., Inc.	324,800	
Fred Stern & Co., Inc.	325,744	
Continental Rubber Co.	44,800	
General Rubber Co.	1,034,880	
William H. Stiles & Co.	100,800	
H. Muehlstein & Co.	181,440	
Various	2,259,514	7,014,600
MAY 12. By "City of Bagdad," Colombo.		
Hood Rubber Co.	*22,400	
L. Littlejohn & Co., Inc.	322,960	
Meyer & Brown, Inc.	112,000	
Poel & Kelly, Inc.	230,710	
Chas. T. Wilson Co., Inc.	56,000	
Fred Stern & Co., Inc.	53,760	
General Rubber Co.	283,360	
William H. Stiles & Co.	33,600	
H. Muehlstein & Co.	35,840	
Various	71,390	1,222,020
MAY 13. By "Port Macquarie," London.		
Fred Stern & Co., Inc.	22,485	
Various	19,095	41,580

	Pounds	Totals
MAY 13. By "Ryndam," Rotterdam.		
L. Littlejohn & Co., Inc.	22,400	
Various	2,080	24,480

Guayule

APRIL 20. By railroad, Mexico.		
Continental-Mexican Rubber Co.	.....	†36,000
MAY 8. By "El Oriente 142," Mexico.		
Continental-Mexican Rubber Co.	.....	†40,300
MAY 23. By "El Sol 145," Mexico.		
Continental-Mexican Rubber Co.	.....	†77,000

Centrals

APRIL 30. By "Sarpfas," Ecuador.		
Pablo Calvet & Co.	.....	8,550

Africans

APRIL 23. By "Borderer," East Africa.		
Various	.....	8,550
MAY 17. By "Gothland," Antwerp.		
Various	.....	4,410

Pontianak

APRIL 25. By "Havana," Far East.		
Various	.....	800
APRIL 26. By "Soerakarta," Far East.		
L. Littlejohn & Co., Inc.	.....	112,000
APRIL 28. By "Sutton Hall," Far East.		
L. Littlejohn & Co., Inc.	34,000	
Various	58,400	92,400
MAY 1. By "Robert Dollar," Far East.		
L. Littlejohn & Co., Inc.	56,000	
Various	292,600	348,600
MAY 11. By "Ningchow," Far East.		
L. Littlejohn & Co., Inc.	.....	156,000

Gutta Siak

APRIL 22. By "Keemun," Rotterdam.		
L. Littlejohn & Co., Inc.	.....	56,000
MAY 11. By "Ningchow," Far East.		
L. Littlejohn & Co., Inc.	.....	168,000

Gutta Percha

APRIL 26. By "Soerakarta," Far East.		
L. Littlejohn & Co., Inc.	.....	74,000

Balata

APRIL 18. By "Prins de Nederlander," Paramaribo.		
William Schall & Co.	.....	3,300
APRIL 30. By "Paria" Paramaribo.		
William Schall & Co.	.....	6,600
APRIL 30. By "Alvarado," Guayaquil.		
Ultramares Corporation	.....	6,000
MAY 1. By "Dunstan," Pará.		
Various	.....	2,250
MAY 8. By "Mayaro," Trinidad.		
Bors & Co.	.....	12,190
MAY 10. By "Anna," Columbia.		
Mecke & Co.	2,300	
Various	4,600	6,900
MAY 12. By "Ryndam," Rotterdam.		
Various	.....	15,640

†Arrived at El Paso.

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	March 1921 Pounds	March 1921 Value	March 1922 Pounds	March 1922 Value
UNMANUFACTURED—*free*				
India rubber				
From France	.....	.....	.....	.....
Netherlands	282,125	$63,225	114,618	$20,430
Portugal	1,022,225	107,547	745,630	37,456
United Kingdom	2,495,490	420,552	4,070,301	727,684
Canada	.....	.....	.....	.....
Central America	3,895	207	266	43
Mexico	.....	.....	6,171	732
Brazil	2,265,853	283,133	1,610,341	169,385
Peru	4,638	974	.....	.....
Other South America	84,861	34,561	357,666	78,256
British East Indies	17,106,287	4,619,839	45,671,036	8,043,271
Dutch East Indies	5,243,621	1,333,270	11,636,762	1,921,438
Other countries	.....	.....	2,431	345
Totals	28,508,995	$6,863,308	64,215,222	$10,999,040
Balata	46,216	28,042	68,423	36,769
Jelutong (Pontianak)	228,424	29,722	878,323	53,649
Gutta percha	140,690	25,227	274,693	37,575
Guayule	.....	.....	222,900	44,580
Rubber scrap	181,799	15,217	97,768	2,270
Totals, unmanufactured	29,106,124	$6,961,516	65,757,329	$11,173,883
Chicle ...*dutiable*	654,149	366,449	856,302	432,489
MANUFACTURED—*dutiable*				
India rubber and gutta percha	.....	$76,612	.....	$212,778
India rubber substitutes	.....	.....	.....	.....

Exports of Domestic Merchandise

	March 1921		March 1922	
MANUFACTURED				
India rubber				
Reclaimed	37,340	$5,609	137,589	$13,512
Scrap and old	371,646	17,997	1,018,885	52,728
Footwear				
Boots[1] ...*pairs*	13,784	49,900	16,117	43,297
Shoes[1] ...*pairs*	185,499	204,914	50,733	44,956
Canvas shoes with rubber soles[1] ...*pairs*	.....	.....	238,134	193,208
Druggists' rubber sundries[1]	.....	87,161	106,552	114,750
Hard rubber goods				
Battery jars and accessories[1]	.....	.....	55,605	12,885
Other electrical supplies	.....	.....	11,463	7,587
Other hard rubber goods[1]	.....	.....	47,543	34,807
Tires				
Pneumatic casings				
For automobiles[1] ...*number*	.....	749,610	150,651	1,907,647
Other[1]	.....	.....	4,429	22,406
Pneumatic tubes				
For automobiles[1]	.....	99,363	94,232	202,811
Other[1]	.....	.....	4,144	5,855
Solid tires				
For automobiles and motor trucks[1]	.....	79,324	5,043	134,691
Other[1]	.....	.....	80,891	21,575
All other tires[1]	.....	40,972	.....	.....
Tire repair materials[1]	.....	.....	67,602	32,394
Belting[1]	.....	104,174	174,803	83,345
Hose[1]	.....	189,975	246,186	104,682
Packing[1]	.....	66,695	105,833	50,119
Soles and heels[1]	.....	36,186	106,649	53,399
Thread[1]	.....	.....	107,068	129,597
Other rubber manufactures[1]	.....	397,476	376,999	258,524
Totals, manufactured	608,269	$2,129,356	3,207,155	$3,524,775
MANUFACTURED				
Fountain pens ...*number*	20,879	$21,951	13,589	$13,813
Insulated wire and cables	.....	721,647	725,388	156,694

Exports of Foreign Merchandise

	March 1921		March 1922	
UNMANUFACTURED				
India rubber	623,851	$114,124	1,469,492	$226,088
Balata	55,711	20,657	66,700	40,561
Jelutong (Pontianak)	42,180	7,433	4,000	583
Totals, unmanufactured	721,742	$142,214	1,540,192	$267,232
MANUFACTURED				
Gutta percha and india rubber	.....	$4,194	.....	$79
India rubber substitutes	.....	.....	160	300
Totals, manufactured	.....	$4,194	.....	$379
Chicle	.....	.....	$1,020	$739

[1]Details of exports of domestic merchandise by countries during March, 1922, appear in this issue.

Custom House Statistics

New York

Imports

	March 1921 Pounds	March 1921 Value	March 1922 Pounds	March 1922 Value
UNMANUFACTURED—*free*				
Crude rubber				
From Belgium	.....	.....	2,325	$326
Netherlands	282,125	$63,225	114,618	20,430
Portugal	1,022,225	107,547	745,630	37,456
England	2,495,490	420,552	4,059,075	725,456
Guatemala	.....	.....	266	43
Mexico	.....	.....	6,171	732
Other British West Indies	.....	.....	106	19
Bolivia	1,213	96	11,520	5,424
Brazil	2,265,853	283,133	1,610,341	169,385
Colombia	40,376	10,592	7,996	1,896
Ecuador	.....	.....	29,002	5,668
Uruguay	6,051	2,745	309,148	65,268
British Indies	83,242	16,348	217,224	36,896
Ceylon	.....	.....	5,918,563	1,049,574
Straits Settlements	12,680,798	3,914,106	36,926,497	6,513,376
Java	.....	.....	5,963,637	880,264
Dutch East Indies	5,167,541	1,313,138	5,673,125	1,041,174
British Guiana	8,930	2,858	.....	.....
Venezuela	28,291	18,270	.....	.....
British East Indies	3,925,847	617,640	.....	.....
Costa Rica	175	20	.....	.....
Peru	4,638	974	.....	.....
Totals	28,012,795	$6,771,244	61,595,244	$10,553,387
Balata	46,216	28,042	68,423	36,769
Jelutong (Pontianak)	228,424	29,722	873,323	53,649
Gutta percha	134,812	24,051	274,693	37,575
Totals	28,422,247	$6,853,059	62,811,683	$10,681,380
Rubber scrap and reclaimed	132,709	10,955	65,826	2,067
Totals, unmanufactured	28,554,956	$6,864,014	62,877,509	$10,683,447
Manufactures of rubber and gutta percha ...*dutiable*	.....	$52,666	.....	$130,320
Chicle ...*dutiable*	125,403	58,997	505,881	268,481

Exports

	March 1921		March 1922	
MANUFACTURED				
Automobile and other tires	.....	$593,551	.....	$1,640,578
Inner tubes	.....	47,060	.....	167,712
Belting, hose and packing	.....	248,235	.....	118,487
Rubber boots and shoes...*pairs*	124,701	120,636	45,456	53,255
Soles and heels	.....	26,995	.....	42,879
Druggists' Sundries	.....	57,900	.....	83,601
Other rubber manufactures	.....	233,448	.....	346,164
Totals manufactured	.....	$1,327,825	.....	$2,452,676
Insulated wire	.....	$632,633	.....	$126,736
UNMANUFACTURED—*free*				
Rubber scrap and reclaimed	199,704	$14,295	911,409	$48,844

Foreign Exports

	March 1921		March 1922	
Crude rubber	152,105	$27,901	1,659	$477
Balata	27,002	14,751	65,780	39,899
Jelutong (Pontianak)	4,536	1,775	.....	.....
Rubber substitutes	.....	.....	.....	300
Rubber manufactures	.....	4,056	.....	18

Imports of Crude Rubber into the United States by Customs Districts

	April, 1922 Pounds	April, 1922 Value
Massachusetts	190,950	$25,718
New York	42,184,495	7,071,100
El Paso	145,300	29,060
Los Angeles	613,660	99,162
San Francisco	272,754	46,988
Chicago	200	70
Totals	43,407,359	$7,272,098

Plantation Rubber Exports from Malaya

(These figures include the production of the Federated Malay States, but not of Ceylon)

To United Kingdom, *pounds*	January 1, to February 28, 1922 Singapore	Malacca	Penang	January 1 to April 6, 1922 Port Swettenham	Totals
	550,700	2,059,000	817,400	4,529,881	7,956,981
The Continent	2,356,100	100,900	478,900	242,720	3,178,620
Japan	6,772,400	.....	56,000	.....	6,828,400
United States	53,415,300	5,363,600	3,691,500	1,337,818	63,808,218
British Possessions	425,100	.....	.....	279,226	704,326
Other countries	38,300	.....	.....	.....	38,300
Totals, *pounds*	63,557,900	7,523,500	5,043,800	6,389,645	82,514,845

Exports of India Rubber Manufactures and Insulated Wire and Cable

EXPORTED TO—	Scrap and Old		Reclaimed		Belting‖	Hose‖	Packing‖	Boots
EUROPE	Pounds	Value	Pounds	Value	Value	Value	Value	Pairs
Austria	.....	.....	.....	.....	$368	.....	.....	.....
Azores, etc., Islands	.....	.....	.....	.....	.....	$2,913	$29	.....
Belgium	306,259	$19,166	.....	.....	4,886	8,337	7,357	146
Bulgaria	.....	.....	.....	.....	.....	2,522	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	58	.....
Denmark	.....	.....	.....	.....	4,750	4,648	3,039	1,016
Esthonia	.....	.....	.....	.....	.....	.....	1,400	.....
Finland	.....	.....	.....	.....	12,593	1,048	503	.....
France	913,459	56,379	.....	.....	40,636	16,041	5,718	.....
Germany	1,840,552	92,691	6,892	$1,607	3,077	1,550	450	.....
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....
Greece	.....	.....	.....	.....	14	6,099	.....	.....
Hungary	.....	.....	.....	.....	3,000	.....	.....	.....
Iceland, etc., Islands	.....	.....	.....	.....	.....	.....	80	2,992
Italy	.....	.....	.....	.....	.....	2,125	707	685
Jugoslavia, etc.	.....	.....	.....	.....	.....	.....	.....	.....
Latvia	.....	.....	.....	.....	.....	.....	.....	.....
Lithuania	.....	.....	.....	.....	.....	.....	.....	.....
Malta, etc., Islands	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	.....	.....	.....	.....	23,865	13,682	3,358	84
Norway	.....	.....	.....	.....	26,086	6,182	344	1,136
Poland and Danzig	.....	.....	.....	.....	.....	694	.....	.....
Portugal	.....	.....	.....	.....	.....	1,021	.....	761
Rumania	.....	.....	.....	.....	2,405	415	594	72
Russia in Europe	.....	.....	.....	.....	.....	50	.....	.....
Spain	2,694,186	192,330	.....	.....	4,150	13,759	450	154
Sweden	11,426	1,450	37,684	5,919	13,354	12,102	5,560	2,386
Switzerland	.....	.....	.....	.....	6,910	844	.....	48
Turkey in Europe	.....	.....	.....	.....	.....	4,466	38	.....
England	74,675	6,963	107,613	12,315	40,020	265,733	51,808	26,082
Scotland	.....	.....	.....	.....	30,033	1,142	3,806	369
Ireland	.....	.....	.....	.....	329	.....	485	.....
TOTALS, EUROPE	5,840,557	$368,919	152,189	$19,841	$216,476	$365,373	$85,784	35,952
NORTH AMERICA								
Bermuda	.....	.....	.....	.....	$568	$4,736	$913	173
British Honduras	.....	.....	.....	.....	57	312	170	10
Canada	755,111	$28,522	1,078,262	$131,279	84,358	90,641	59,514	19,054
Costa Rica	.....	.....	.....	.....	6,081	5,069	1,859	.....
Guatemala	.....	.....	.....	.....	5,178	7,176	2,644	800
Honduras	.....	.....	.....	.....	10,613	17,672	3,240	.....
Nicaragua	.....	.....	.....	.....	8,642	1,606	1,796	265
Panama	6,087	624	.....	.....	13,831	78,827	15,517	1,931
Salvador	.....	.....	.....	.....	423	2,543	1,127	.....
Greenland	.....	.....	.....	.....	.....	.....	.....	.....
Mexico	87,624	1,902	.....	.....	254,872	486,219	213,178	898
Miquelon, Langley, etc.	.....	.....	.....	.....	916	10	30	3,243
Newfoundland and Labrador	.....	.....	.....	.....	3,251	4,809	316	20,024
Barbados	.....	.....	.....	.....	416	112	379	.....
Jamaica	.....	.....	.....	.....	7,053	6,576	3,386	1
Trinidad and Tobago	.....	.....	.....	.....	4,589	8,996	3,956	9
Other British West Indies	.....	.....	.....	.....	1,448	1,847	806	.....
Cuba	.....	.....	.....	.....	39,547	165,605	59,782	1,359
Virgin Islands of United States	.....	.....	.....	.....	443	1,624	228	1
Dutch West Indies	.....	.....	.....	.....	11	2,550	592	.....
French West Indies	.....	.....	.....	.....	537	27	.....	.....
Haiti	.....	.....	.....	.....	.....	2,344	1,025	.....
Dominican Republic	200	80	.....	.....	5,086	10,935	15,108	76
TOTALS, NORTH AMERICA	849,022	$31,128	1,078,262	$131,279	$447,920	$900,236	$385,566	47,844
SOUTH AMERICA								
Argentina	.....	.....	.....	.....	$54,709	$66,055	$10,289	638
Bolivia	.....	.....	.....	.....	6,557	9,101	139	132
Brazil	.....	.....	.....	.....	43,765	65,785	12,002	404
Chile	.....	.....	.....	.....	49,872	47,962	10,656	480
Colombia	.....	.....	.....	.....	12,131	19,754	5,989	24
Ecuador	.....	.....	.....	.....	856	17,456	1,532	.....
Falkland Islands	.....	.....	.....	.....	.....	.....	.....	.....
British Guiana	.....	.....	.....	.....	.....	370	1,375	1
Dutch Guiana	.....	.....	.....	.....	663	950	.....	.....
French Guiana	.....	.....	.....	.....	.....	399	278	.....
Paraguay	.....	.....	.....	.....	2,996	.....	.....	.....
Peru	.....	.....	.....	.....	103,049	32,792	5,325	610
Uruguay	.....	.....	.....	.....	2,068	7,838	1,019	1,176
Venezuela	.....	.....	.....	.....	4,472	6,587	8,121	.....
TOTALS, SOUTH AMERICA	.....	.....	.....	.....	$218,138	$275,049	$56,725	3,465
ASIA								
Aden	.....	.....	.....	.....	.....	.....	.....	.....
China	.....	.....	.....	.....	$13,061	$25,381	$10,934	92
Kwantung	.....	.....	.....	.....	.....	124	.....	.....
Chosen	.....	.....	.....	.....	574	1,006	453	120
British India	.....	.....	.....	.....	64,014	47,474	7,279	97
Straits Settlements	.....	.....	.....	.....	1,837	782	.....	.....
Other British East Indies	.....	.....	.....	.....	.....	.....	.....	.....
Dutch East Indies	.....	.....	.....	.....	31,681	20,808	11,861	24
Far Eastern Republic	.....	.....	.....	.....	.....	.....	.....	16
French East Indies	.....	.....	.....	.....	.....	.....	.....	.....
French Indo China	.....	.....	.....	.....	8,140	.....	517	.....
Portuguese East Indies	.....	.....	.....	.....	.....	.....	.....	.....
Greece in Asia	.....	.....	.....	.....	.....	30	.....	.....
Hejaz, etc.	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	476	6,958	568	133
Japan	1,144,705	$23,249	24,810	$3,536	12,710	19,134	57,283	107,512
Palestine and Syria	.....	.....	.....	.....	.....	212	.....	.....
Persia	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Asia	.....	.....	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	.....	917	72	.....	681
Turkey in Asia	.....	.....	.....	.....	150	144	55	168
Other Asia	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	1,144,705	$23,249	24,810	$3,536	$133,560	$122,125	$88,950	108,850

From the United States by Countries During the Calendar Year 1921

Boots Value	Shoes Pairs	Shoes Value	Soles and Heels Value	Automobile Tires: Casings Value	Automobile Tires: Inner Tubes Value	Automobile Tires: Solid Tires Value	Automobile Tires: All Others Value	Druggists' Rubber Sundries Value	All Other Manufactures of Rubber Value	Totals Value	Insulated Wire and Cables Value
.....	40	$50	.....	.....	.....	$95	.....	.....	$880	$1,393	.....
.....	42	38	$67	$465	$4	.....	.....	$159	161	3,836	$125
$428	17,800	15,058	32	63,582	10,733	.....	$8,919	3,799	43,819	186,056	41,482
.....	13	16	.....	.....	.....	.....	.....	.....	386	2,924	.....
.....	.....	.....	.....	7,794	774	.....	15	.....	81	8,722	.....
1,348	105,634	111,901	3,350	258,630	15,333	5,407	3,134	1,723	20,047	433,310	23,036
.....	10,047	25,069	.....	4,316	.....	.....	100	.....	.....	30,885	.....
.....	124	140	55	43,959	1,472	2,414	1,005	.....	2,707	65,896	2,630
.....	7,030	5,577	60	380,985	2,673	700	254	32,064	346,400	887,487	134,416
.....	94	107	15	11,868	1,415	.....	358	.....	3,898	117,036	1,326
.....	.....	.....	.....	366	142	.....	.....	.....	432	940	.....
.....	32	46	126	101,295	9,654	589	32	.....	1,428	119,283	4,336
.....	.....	.....	275	.....	.....	.....	.....	.....	.....	3,275	.....
8,908	19,446	24,487	694	6,692	299	.....	.....	.....	153	41,313	605
2,187	6,738	4,557	412	24,700	410	.....	245	1,922	34,730	71,995	107,670
.....	.....	.....	.....	18,776	430	1,530	.....	.....	1,174	21,910	1,530
.....	.....	.....	.....	47	.....	.....	.....	.....	200	247	.....
.....	.....	.....	.....	1,214	202	.....	.....	.....	572	1,988	.....
.....	.....	.....	.....	11,801	4	.....	.....	.....	1,138	12,943	.....
257	14,127	13,370	2,477	95,794	14,310	1,924	5,379	21,401	26,216	222,027	154,969
2,114	245,334	221,300	7,532	284,487	15,511	20,258	7,936	1,851	17,063	610,664	27,913
.....	23,605	19,822	340	22,597	3,207	7,098	5,500	6,055	1,753	67,066	267,603
3,519	2,060	2,511	102	16,694	432	40	124	838	325	25,606	9,574
291	12,988	13,379	.....	35,078	7,668	3,146	1,347	439	827	65,589	984
.....	960	2,200	.....	.....	.....	.....	.....	.....	.....	2,250	.....
475	31,816	25,163	16,134	270,782	18,227	22,832	19,503	8,490	53,198	645,493	75,463
8,306	22,894	38,117	778	510,247	34,730	21,265	5,422	2,322	44,065	703,637	2,342,710
117	77,998	69,714	731	94,552	1,824	.....	3,033	590	19,131	197,446	37,956
.....	36,219	36,188	656	38,119	5,056	1,328	.....	577	5,465	91,893	878
56,149	126,910	94,669	22,456	2,969,245	238,438	144,325	9,282	210,575	1,124,040	5,246,018	233,598
688	68,000	65,433	.....	3,899	203	288	83	870	47,770	154,215	40,412
.....	.....	.....	.....	753	88	.....	.....	1,647	8,331	11,633	7,431
$84,787	829,951	$788,912	$56,292	$5,278,737	$383,239	$233,239	$71,671	$295,322	$1,806,384	$10,054,976	$3,516,647
$613	8,856	$13,936	$1,969	$50	$64	.....	$2,245	$1,915	$2,959	$29,968	$6,125
28	12,154	15,388	918	3,680	1,280	$30	128	542	365	22,898	868
70,315	33,221	51,662	3,395	826,563	131,828	82,777	25,655	203,305	1,444,831	3,234,645	196,795
.....	653	804	6,598	6,969	1,013	1,368	829	1,523	3,743	35,856	17,014
2,300	3,883	5,045	6,082	36,360	4,693	633	2,124	2,960	9,198	84,393	16,053
.....	7,609	11,132	3,324	17,624	2,122	3,783	232	3,105	7,868	80,715	17,624
561	4,356	6,208	8,012	10,180	1,951	.....	241	1,637	2,377	43,211	6,638
4,614	53,844	62,759	23,478	114,596	20,486	11,974	16,553	6,327	29,048	398,634	78,541
.....	946	1,002	21,741	40,486	5,597	4,888	1,197	622	3,185	82,811	11,797
.....	72	55	.....	.....	.....	.....	.....	.....	.....	55	.....
3,495	325,371	386,560	86,984	1,173,826	142,697	51,730	49,740	75,628	352,129	3,278,960	655,084
11,258	818	624	29	.....	.....	.....	.....	.....	267	13,134	.....
62,886	13,658	12,110	6,877	16,033	2,314	327	274	831	8,727	118,755	23,629
.....	2,966	3,654	51	27,108	3,473	1,826	1,623	163	2,794	41,599	1,717
5	38,199	42,392	2,011	96,112	7,588	27,284	2,272	2,442	7,991	205,112	22,006
35	11,906	13,392	742	95,274	10,584	16,783	1,292	1,057	9,477	166,177	30,031
.....	19,782	22,240	1,361	16,023	2,449	1,263	3,542	747	1,376	53,102	29,441
4,976	292,810	304,626	99,627	1,020,130	118,133	223,845	36,558	64,749	156,381	2,293,959	740,856
3	11,266	17,553	1,503	12,505	2,221	14,501	626	323	2,048	53,578	3,093
.....	6,651	7,125	1,313	16,004	1,698	.....	211	367	1,675	31,546	610
.....	7	13	.....	16,071	2,132	2,695	1,437	.....	314	23,226	590
.....	1,687	2,831	245	35,227	4,776	150	710	1,170	4,585	53,063	1,768
196	18,733	23,473	2,457	121,168	13,856	3,787	2,745	5,099	10,335	214,325	61,850
$161,285	869,448	$1,004,584	$278,717	$3,701,989	$480,975	$449,644	$150,234	$374,512	$2,061,673	$10,559,722	$1,922,130
$2,439	189,360	$183,824	$18,206	$739,306	$68,938	$29,716	$9,695	$34,929	$143,806	$1,361,912	$278,157
567	114	118	1,542	8,821	914	405	206	784	1,258	30,412	49,815
669	54,153	53,963	31,213	211,553	6,252	8,889	1,747	16,720	50,448	503,006	669,742
1,953	21,863	19,782	890	92,321	12,939	7,078	733	7,959	47,794	299,939	243,114
71	10,520	12,395	8,251	54,087	5,640	4,587	1,542	12,208	13,703	150,358	105,582
.....	10,046	8,292	591	26,065	3,291	688	.....	2,699	3,091	64,561	7,613
.....	.....	.....	.....	.....	486	.....	.....	.....	.....	486	.....
5	5,980	6,948	.....	17,114	3,361	1,466	45	37	1,707	32,428	6,814
.....	1,040	1,393	566	3,893	508	.....	530	468	493	9,464	209
.....	.....	.....	.....	200	122	.....	.....	.....	244	1,243	1,912
.....	.....	.....	.....	376	127	.....	.....	33	106	3,638	612
4,203	1,500	2,145	1,381	142,881	17,770	15,228	329	5,866	20,119	351,088	111,610
5,273	50,630	48,686	3,660	152,145	3,098	751	1,850	8,290	37,705	274,253	68,589
.....	527	561	6,281	125,595	14,342	2,540	1,036	3,878	12,069	185,482	37,611
$15,180	345,733	$338,107	$72,581	$1,574,357	$139,658	$71,348	$17,713	$93,871	$332,543	$3,268,270	$1,581,389
.....	.....	.....	.....	$8,150	$399	.....	$346	.....	$70	$8,965	.....
$333	15,146	$16,081	$12,422	117,597	5,422	$3,566	363	$23,170	84,167	312,497	$439,694
.....	1,440	1,539	.....	106	.....	.....	.....	280	220	2,269	6,983
339	864	798	.....	6,553	1,820	.....	.....	437	381	12,361	20
362	10,188	17,149	406	256,756	17,344	116,831	3,222	9,640	28,211	568,688	286,292
.....	5,578	7,627	.....	63,251	7,462	41,253	3,427	2,556	2,546	130,741	2,936
.....	768	951	288	4,372	1,803	1,819	.....	396	643	10,272	121,919
74	841	1,481	350	374,573	31,149	96,076	2,823	4,762	36,630	612,268	.....
28	718	386	.....	.....	.....	.....	.....	.....	.....	414	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	217
.....	.....	.....	.....	3,443	58	.....	.....	116	136	12,410	.....
.....	.....	.....	.....	.....	.....	.....	.....	33	.....	33	.....
.....	.....	.....	.....	4,151	366	326	.....	.....	50	4,923	.....
.....	.....	.....	.....	8,287	449	.....	5,576	.....	.....	14,312	.....
409	19,096	20,649	245	40,974	2,343	5,178	4,128	8,992	17,495	108,415	2,596
235,655	257,779	259,199	1,857	146,071	10,860	34,546	3,660	7,837	286,083	1,101,680	109,571
.....	999	829	1,528	28,164	5,370	432	1,200	18	2,162	39,915	.....
.....	9,987	12,064	.....	3,335	126	.....	.....	.....	1,300	16,825	.....
2,354	144	360	.....	.....	.....	.....	392	44	416	3,566	.....
11	560	660	.....	11,084	463	286	.....	898	920	15,311	860
519	5,197	5,849	215	53,446	6,771	1,980	.....	220	2,529	71,878	179
.....	144	305	.....	.....	.....	.....	.....	.....	.....	305	.....
$240,084	329,449	$345,927	$17,311	$1,130,313	$92,205	$302,293	$25,137	$59,399	$463,959	$3,048,048	$971,267

Exports of India Rubber Manufacturers from the United

EXPORTED TO—	Scrap and Old		Reclaimed		Belting‖	Hose‖	Packing‖	Boots
	Pounds	Value	Pounds	Value	Value	Value	Value	Pairs
OCEANIA								
Australia	.....	.....	.....	.....	$39,185	$17,214	$30,232	3,419
New Zealand	.....	.....	.....	.....	40,139	11,632	9,824	10,596
Other British Oceania	.....	.....	.....	.....	.....	25	264	.....
French Oceania	.....	.....	.....	.....	207	314	265	.....
Other Oceania	.....	.....	.....	.....	.....	30	.....	.....
Philippine Islands	.....	.....	.....	.....	50,700	35,614	22,938	1,413
TOTALS, OCEANIA	.....	.....	.....	.....	$130,231	$65,829	$63,523	15,428
AFRICA								
Belgian Congo	.....	.....	.....	.....	$4,637	$342	.....	.....
British West Africa	.....	.....	.....	.....	.....	.....	.....	73
British South Africa	3,150	$306	.....	.....	214,893	208,564	$33,127	1,554
British East Africa	.....	.....	.....	.....	.....	224	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....
French Africa	.....	.....	.....	.....	11,243	352	180	.....
Kamerun, etc.	.....	.....	.....	.....	.....	.....	.....	3
Liberia	.....	.....	.....	.....	.....	.....	.....	.....
Morocco	.....	.....	.....	.....	2,960	.....	.....	.....
Portuguese Africa	.....	.....	.....	.....	2,825	5,380	1,719	12
Egypt	.....	.....	.....	.....	180	1,826	.....	.....
TOTALS, AFRICA	3,150	$306	.....	.....	$236,738	$216,688	$35,026	1,641
Calendar year, 1921	7,837,434	$423,602	1,255,261	$154,656	$1,446,063	$1,945,300	$715,574	213,180
Calendar year, 1920	10,468,538	$788,097	4,909,214	828,694	¶3,532,277	¶3,340,882	¶1,525,242	302,852
					Belting, Hose and Packing			
Calendar year, 1919	8,292,053	$808,993	5,070,632	$839,938	.....	$6,100,460	.....	261,110
§Calendar year, 1918	2,931,929	287,883	2,944,234	502,176	.....	4,525,243	.....	722,586
‖Fiscal year, 1917-18	2,117,257	235,811	3,284,958	567,278	.....	4,578,396	.....	1,559,598
Fiscal year, 1916-17	3,696,661	415,526	4,938,991	814,199	.....	3,532,384	.....	600,455
Fiscal year, 1915-1916	3,904,715	400,148	6,406,946	871,262	.....	2,986,953	.....	720,130
Fiscal year, 1914-15	2,422,091	291,421	5,970,380	822,561	.....	1,807,848	.....	318,727
Fiscal year, 1913-14	6,207,672	598,287	5,583,860	834,440	.....	2,372,887	.....	101,361
Fiscal year, 1912-13	7,269,465	880,442	5,413,247	932,904	.....	2,605,551	.....	109,528
Fiscal year, 1911-12	7,336,984	$780,188	5,397,806	$875,501	.....	$2,315,484	.....	.....
Fiscal year, 1910-11	7,049,729	723,664	4,994,527	781,650	.....	2,163,416	.....	.....
Fiscal year, 1909-10	6,143,610	578,944	3,622,556	535,795	.....	1,960,825	.....	.....
Fiscal year, 1908-09	4,071,795	402,897	3,196,551	414,861	.....	1,498,445	.....	.....
Fiscal year, 1907-08	4,255,789	449,727	2,947,974	418,738	.....	1,347,775	.....	.....
Fiscal year, 1906-07	4,756,621	548,695	4,550,788	665,109	.....	1,253,369	.....	.....
Fiscal year, 1905-06	.....	.....	4,084,696	511,843	.....	1,221,159	.....	.....
Fiscal year, 1904-05	.....	.....	*	522,902	.....	994,100	.....	.....
Fiscal year, 1903-04	.....	.....	.....	.....	.....	880,010	.....	.....
Fiscal year, 1902-03	.....	.....	.....	.....	.....	819,985	.....	.....
Fiscal year, 1901-02	.....	.....	.....	.....	.....	634,146	.....	.....
Fiscal year, 1900-01	.....	.....	.....	.....	.....	565,726	.....	.....

*Not officially reported. **States separately after 1912. †Tires were not specifically reported before 1910-11. ‡Druggists' rubber sundries were not specifically reported before 1917-18. §These figures are given for the calendar year ended December 31, 1918. ‖Ended June 30, 1918. ¶Not specifically reported before 1920.

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting	Hose	Packing	Thread	Boots		Shoes		Canvas Shoes with Rubber Soles		Soles and Heels	Leather or Artificial Cloth	Waterproofed and Auto Cloth and Auto Topping
EUROPE	Value	Value	Value	Value	Pairs	Value	Pairs	Value	Pairs	Value	Value	Value	Value
Azores and Madeira Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	2,556	$2,628	$1,249	$2,390	.....	.....	.....	.....	.....	.....	.....	$1,817	$1,676
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$25	.....	.....
Denmark	.....	257	610	.....	.....	.....	936	$1,829	5,380	$3,734	327	481	337
Esthonia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Finland	408	.....	208	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	8,392	274	337	31,176	.....	.....	1,464	1,380	65	67	.....	49,899	250
Germany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	620	277
Gibralta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gibraltar	.....	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Italy	.....	.....	.....	.....	4	$24	.....	.....	.....	.....	.....	5,364	3,430
Jugoslavia, Albania, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Latvia	.....	148	.....	.....	24	88	.....	.....	.....	.....	.....	.....	.....
Malta, Gazo, and Cypress Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	64	3,219	.....	.....	.....	.....	.....	.....	4,866	3,218	.....	165	445
Norway	3,700	.....	.....	.....	.....	.....	483	767	6,624	4,069	682	280	166
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	17	.....	.....	330	1,437	.....	.....	.....	.....	.....	.....	.....
Rumania	.....	92	196	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Europe	.....	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	631	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,437	.....
Sweden	1,988	658	297	.....	.....	.....	.....	.....	.....	.....	.....	14,514	.....
Switzerland	.....	.....	.....	5,079	.....	.....	.....	.....	.....	.....	.....	1,710	365
Turkey in Europe	.....	.....	.....	.....	.....	.....	147	119	.....	.....	.....	.....	.....
England	1,291	10,973	2,740	77,586	1,580	2,693	3,590	3,147	45,560	36,892	1,045	9,835	5,994
Scotland	920	409	496	.....	1,152	3,853	.....	.....	12,768	9,524	.....	3,375	.....
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$19,950	$18,795	$6,133	$116,231	3,090	$8,095	6,620	$7,242	75,263	$57,504	$2,079	$92,497	$12,940

States by Countries During the Calendar Year 1921—*(Continued)*

Boots Value	Shoes Pairs	Shoes Value	Soles and Heels Value	Automobile Tires Casings Value	Automobile Tires Inner Tubes Value	Automobile Tires Solid Tires Value	Automobile Tires All Others Value	Druggists' Rubber Sundries Value	All Other Manufactures of Rubber Value	Totals Value	Insulated Wire and Cables Value
$12,624	8,558	$11,046	$2,010	$224,731	$19,154	$16,959	$7,423	$16,002	$73,380	$469,960	$156,086
440,027	7,215	7,343	12,671	542,145	16,419	56,139	26,168	10,037	47,536	824,080	162,983
.....	6,844	9,154	.....	9,704	2,761	1,485	1,576	67	263	25,299	116
.....	4,969	6,538	94	10,192	1,075	3,739	1,290	15	209	23,938	406
.....	2,027	3,324	.....	4,030	331	497	144	50	180	8,586	121
3,240	254,090	302,904	58,590	445,746	55,892	154,935	55,856	12,557	134,502	1,334,474	175,235
$59,891	283,703	$340,309	$73,365	$1,236,548	$95,632	$233,754	$92,457	$38,728	$256,070	$2,686,337	$494,947
.....	26	$43	.....	.....	.....	.....	.....	$500	$146	$5,668	$210
$284	215	304	$667	$132,908	$18,226	$540	$53	48	248	53,278	77
6,261	8,730	9,345	12,626	241,539	11,037	3,912	429	10,354	68,547	820,940	83,200
.....	936	900	.....	48,584	3,797	535	.....	85	3,540	57,665	1,972
.....	312	305	.....	23,609	998	344	.....	51	375	25,682	61
.....	1	2	.....	2,609	495	2,638	296	28	594	18,437	3
13	15	30	.....	825	94	.....	.....	32	.....	994	.....
.....	.....	.....	.....	16	145	.....	.....	84	80	325	102
.....	312	305	.....	1,940	439	572	.....	.....	70	6,286	25
47	.....	.....	247	174	208	1,262	7	17	3,594	15,480	114
.....	19	36	514	48,118	5,040	.....	966	1,782	5,339	63,801	1,683
$6,605	10,566	$11,270	$14,054	$500,322	$40,479	$9,803	$1,751	$12,981	$82,533	$1,168,556	$87,449
$567,832	2,668,850	$2,829,109	$512,320	$13,422,266	$1,232,168	$1,300,081	$358,963	$874,813	$5,003,162	$30,785,909	$8,573,820
1,012,099	10,088,511	9,738,390	†984,235	†43,899,502	†4,812,980	†3,331,789	1,029,744	1,890,957	8,722,009	85,436,897	†8,208,539

†Tires Automobile Value	†Tires All Others Value	Druggists' Rubber Sundries Value	All Other Manufactures of Rubber Value	Totals Value	Insulated Wire and Cables Value
$28,924,659	$1,557,227	$1,270,506	$9,097,773	$53,865,655	.....
14,511,621	755,888	772,539	5,762,079	31,501,292	.....
13,977,671	1,130,623	‡884,245	6,194,816	33,343,181	.....
12,330,201	2,547,652	.....	8,265,509	31,105,075	.....
17,936,227	3,003,077	.....	7,290,345	35,153,374	.....
4,963,270	576,602	.....	3,525,486	14,767,513	.....
3,505,267	563,372	.....	3,453,472	12,441,220	.....
3,943,220	611,458	.....	3,913,036	14,324,894	.....

Boots and Shoes** Pairs.	Boots and Shoes** Value.	†Tires Automobile Value	†Tires All Others Value	Druggists' Rubber Sundries Value	All Other Manufactures of Rubber Value	Totals Value	Insulated Wire and Cables Value
2,545,076	$1,502,890	$2,657,809	$546,833	.....	$4,144,273	$12,822,978	.....
3,984,332	2,219,430	†2,085,107	592,470	.....	3,886,825	12,452,562	.....
3,791,084	1,984,739	.....	.....	.....	5,115,331	10,175,634	.....
2,396,435	1,292,673	.....	.....	.....	3,823,956	7,432,832	.....
3,080,253	1,614,290	.....	.....	.....	3,743,040	7,573,570	.....
2,310,420	1,231,898	.....	.....	.....	3,729,643	7,428,714	.....
2,693,690	1,505,082	.....	.....	.....	2,966,144	6,204,228	.....
2,390,539	1,214,342	.....	.....	.....	2,572,375	5,303,719	.....
2,310,420	1,231,898	.....	.....	.....	3,729,643	5,841,551	.....
2,307,401	1,056,491	.....	.....	.....	2,299,875	4,176,351	.....
2,594,708	1,046,315	.....	.....	.....	1,781,941	3,462,402	.....
1,459,100	724,015	.....	.....	.....	1,727,527	3,017,268	.....

United States by Countries During March, 1922

Waterproofed Clothing Value	Pneumatic Casings Automobile Number	Pneumatic Casings Automobile Value	Pneumatic Casings Others Value	Solid Tires Automobile Value	Solid Tires Others Value	Pneumatic Tubes Automobile Number	Pneumatic Tubes Automobile Value	Pneumatic Tubes Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods Battery Jars and Accessories Value	Hard Rubber Goods Other Electrical Supplies Value	Hard Rubber Goods Others Value	All Other Rubber Manufactures Value	Totals Value
.....	16	$201	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$201
.....	532	7,172	$900	.....	.....	503	$945	.....	.....	$1,578	.....	.....	.....	$933	23,844
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25
.....	3,953	58,437	2,208	.....	.....	4,596	7,793	$111	$1,195	1,661	.....	.....	.....	1,510	80,490
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	.....	.....	.....	.....	40
.....	91	2,312	.....	.....	.....	144	432	.....	.....	.....	.....	.....	.....	75	3,435
.....	2,162	25,898	.....	$1,024	.....	784	1,426	.....	148	2,054	.....	.....	$8,110	3,133	133,578
.....	122	3,251	.....	.....	.....	.....	.....	.....	330	.....	.....	.....	.....	.....	4,478
.....	12	132	.....	.....	.....	.....	.....	.....	60	.....	.....	.....	.....	.....	192
.....	1,417	16,707	.....	386	.....	1,089	2,021	.....	26	.....	.....	.....	.....	83	19,290
$5	92	622	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,139	16,584
.....	322	6,112	.....	.....	.....	430	800	.....	85	.....	.....	.....	.....	.....	6,997
.....	10	104	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	340
.....	124	1,264	.....	.....	.....	24	57	.....	.....	.....	.....	.....	.....	.....	1,321
.....	1,537	24,850	1,028	708	.....	702	1,783	112	460	467	.....	$24	.....	2,021	38,564
.....	1,237	28,424	.....	2,635	.....	962	2,156	.....	93	331	.....	.....	.....	488	43,791
.....	3,936	81,503	.....	.....	.....	6,480	37,025	.....	.....	.....	.....	.....	.....	.....	118,528
.....	132	2,325	92	.....	.....	288	737	18	87	.....	.....	.....	.....	250	4,963
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	88	376
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46
280	1,145	17,106	.....	4,220	.....	363	706	.....	51	180	.....	.....	.....	1,588	29,206
58	3,610	69,059	.....	324	.....	2,017	5,697	.....	570	.....	.....	.....	.....	1,453	94,618
.....	156	2,396	98	.....	.....	69	165	22	.....	.....	.....	.....	.....	1,496	11,331
.....	272	3,816	.....	.....	.....	482	873	.....	.....	.....	.....	.....	.....	.....	4,808
.....	41,936	402,885	3,182	14,752	$1,425	14,464	21,713	9	8,319	69,049	84	942	5,342	73,350	753,248
180	347	5,163	.....	.....	.....	140	265	.....	113	4,545	.....	.....	107	354	29,304
.....	21	387	.....	.....	.....	17	37	.....	.....	.....	.....	.....	.....	293	717
$523	63,182	$760,126	$7,508	$24,049	$1,425	33,554	$84,631	$272	$11,537	$79,905	$84	$966	$13,559	$94,254	$1,420,305

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather or Artificial Cloth Value	Waterproofed and Auto Cloth and Auto Topping Value
NORTH AMERICA													
Canada—Maritime Provinces	.....	$238	.....	.....	1,491	$5,079	1,395	$187	36	$34	$20	$393	$365
Quebec and Ontario	$10,567	10,723	$5,697	$3,478	120	458	83	236	1,214	1,265	3,012	29,024	26,222
Prairie Provinces	.....	904	128	.....	.....	.....	.....	.....	36	32	9	526	60
British Columbia and Yukon	807	77	313	.....	386	703	177	248	.....	.....	.....	102	727
British Honduras	17	.....	23	.....	.....	.....	92	106	1,958	2,113	226	.....	.....
Costa Rica	216	1,582	81	.....	.....	.....	40	28	270	276	2,284	257	.....
Guatemala	.....	1,149	159	37	.....	.....	72	57	72	79	1,112	.....	.....
Honduras	531	1,897	377	.....	.....	.....	273	233	779	966	279	.....	.....
Nicaragua	131	103	152	.....	.....	.....	.....	.....	1,274	1,287	449	.....	262
Panama	168	656	.....	.....	.....	.....	2,015	3,146	4,118	2,880	3,390	683	.....
Salvador	.....	361	253	.....	.....	.....	.....	.....	.....	.....	5,038	.....	.....
Mexico	22,941	40,105	12,264	.....	86	635	3,944	3,917	39,790	34,651	6,362	3,873	558
Miquelon, etc., Island	.....	.....	12	.....	318	860	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	171	447	700	.....	3,329	11,015	496	266	5,012	4,264	469	.....	184
Bermuda	.....	151	139	.....	.....	.....	89	80	1,460	1,957	120	109	.....
Barbados	.....	.....	.....	.....	.....	.....	124	129	370	362	.....	.....	.....
Jamaica	110	571	.....	.....	.....	.....	1	1	5,353	5,202	140	139	934
Trinidad and Tobago	.....	599	172	.....	.....	.....	136	233	1,983	1,539	100	.....	610
Other British West Indies	21	28	.....	.....	.....	.....	648	742	1,681	1,609	.....	.....	.....
Cuba	1,055	3,244	3,603	.....	48	147	492	333	31,624	20,024	5,402	1,021	3,300
Dominican Republic	174	827	350	.....	.....	.....	.....	.....	782	826	447	.....	.....
Dutch West Indies	.....	65	.....	.....	.....	.....	72	44	324	310	106	.....	110
French West Indies	70	9	75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	107	170	491	.....	.....	.....	.....	.....	.....	.....	.....	.....	36
Virgin Islands of United States	.....	.....	66	.....	.....	.....	.....	.....	396	417	82	.....	.....
TOTALS, NORTH AMERICA	$37,086	$63,906	$25,055	$3,515	5,778	$18,897	10,149	$9,986	98,532	$80,093	$29,047	$36,127	$33,368
SOUTH AMERICA													
Argentina	$1,889	$3,498	$491	.....	.....	.....	.....	.....	19,812	$17,826	$7,038	$5,140	$10,152
Bolivia	715	.....	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	4,639	4,186	2,605	$490	.....	.....	.....	.....	.....	.....	610	395	3,755
Chile	2,154	2,138	.....	.....	.....	.....	.....	.....	.....	.....	.....	260	425
Colombia	465	1,306	804	.....	.....	.....	.....	.....	.....	.....	4,349	104	.....
Ecuador	.....	101	70	.....	.....	.....	.....	.....	.....	.....	100	.....	.....
British Guiana	.....	.....	.....	.....	.....	.....	.....	.....	1,253	1,055	.....	.....	333
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	192	148	71	175	.....
Peru	822	119	553	.....	.....	.....	.....	.....	.....	.....	427	.....	91
Paraguay	648	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45
Uruguay	54	145	.....	.....	.....	.....	.....	.....	.....	.....	1,014	.....	2,126
Venezuela	.....	587	243	216	.....	.....	.....	.....	.....	.....	774	1,057	383
TOTALS, SOUTH AMERICA	$11,386	$12,080	$4,901	$706	.....	.....	.....	.....	21,257	$19,029	$14,383	$7,131	$17,310
OCEANIA													
Philippine Islands	$2,667	$2,363	$1,264	.....	537	$1,052	2,442	$1,478	33,142	$26,549	$3,861	$1,891	$2,835
Australia	1,842	.....	2,088	.....	72	220	10,696	7,549	3,900	2,882	.....	17,460	4,519
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	198	241	2	.....	.....
French Oceania	.....	16	18	.....	.....	.....	.....	.....	721	710	29	.....	.....
New Zealand	1,054	234	257	.....	1,806	5,050	129	405	.....	.....	2,258	.....	88
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	375	707	.....	.....	.....
TOTALS, OCEANIA	$5,563	$2,613	$3,627	.....	2,415	$6,322	13,267	$9,432	38,336	$31,089	$6,150	$19,351	$7,442
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	.....	$23	$89	.....	24	$61	240	$155	168	$151	$88	$511	$365
Ceylon	.....	666	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Straits Settlements	$3,862	.....	271	.....	.....	.....	.....	.....	48	40	.....	.....	.....
China	.....	186	306	.....	.....	.....	1,356	1,526	1,826	2,630	.....	2,222	465
Chosen	.....	.....	92	.....	.....	.....	96	81	.....	.....	.....	.....	.....
Java and Madura	1,453	498	376	.....	.....	.....	.....	.....	.....	.....	200	1,472	2,616
Other Dutch East Indies	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Far Eastern Republic	.....	96	.....	.....	.....	.....	468	1,716	290	259	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	72	67	.....	.....	.....
Hejaz, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	45	79	264	336	.....	.....	41	.....	12
Japan	2,986	2,197	7,224	9,145	4,200	8,260	16,296	13,468	578	358	.....	1,460	.....
Kivantung	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	942	1,036	175	1,122	.....
Persia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Turkey in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece in Asia	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	$8,301	$3,792	$8,358	$9,145	4,269	$8,400	18,720	$17,282	3,924	$4,541	$504	$6,787	$3,458
AFRICA													
British West Africa	$1,059	$2,978	$2,045	.....	1	$5	.....	.....	.....	.....	.....	$35	$63
British South Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,361	720
British East Africa	.....	.....	.....	.....	564	1,578	1,977	$1,014	822	$952	$1,236	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	.....	518	.....	.....	.....	.....	.....	.....	.....	.....	.....	159	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$1,059	$3,496	$2,045	.....	565	$1,583	1,977	$1,014	822	$952	$1,236	$2,555	$783
GRAND TOTALS	$83,345	$104,682	$50,119	$129,597	16,117	$43,297	50,733	$44,956	238,134	$193,208	$53,399	$164,448	$75,301

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

United States by Countries During March, 1922—*Continued*

Water-proofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	All Other Rubber Manufactures Value	Totals Value
$203	59	$1,092	$69	.....	.....	9	$23	.....	.....	$290	$16	.....	$217	$2,878	$11,104
1,039	4,158	57,885	221	$7,050	$1,005	2,871	6,364	.....	$1,979	15,368	8,960	$1,824	15,606	78,372	286,355
360	146	2,495	15	.....	27	172	277	$57	1,188	2,168	1,002	161	1,665	6,748	17,822
215	186	4,052	60	504	.....	116	409	11	5	841	.....	.....	.....	4,130	13,204
.....	37	434	.....	.....	.....	4	9	.....	7	5	.....	.....	.....	3	2,943
188	283	5,807	.....	.....	146	142	422	.....	.....	.....	.....	29	18	102	11,436
.....	34	856	.....	86	487	34	79	.....	.....	151	.....	.....	.....	20	4,272
.....	92	3,279	.....	1,765	.....	78	202	.....	.....	155	.....	.....	.....	514	10,198
.....	26	468	.....	.....	.....	18	30	.....	.....	18	.....	.....	.....	59	2,959
.....	830	11,123	76	626	7	820	1,674	16	.....	167	.....	.....	20	1,248	25,880
.....	77	2,557	.....	.....	.....	73	279	.....	.....	.....	.....	.....	.....	.....	8,488
14,300	7,421	96,882	1,362	3,652	606	6,383	11,705	539	1,024	1,983	.....	553	1,714	14,119	273,745
988	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,860
7,344	17	152	.....	.....	.....	18	34	.....	.....	105	.....	.....	.....	1,389	26,540
403	.....	.....	.....	.....	111	.....	.....	.....	.....	183	.....	.....	.....	475	3,728
.....	134	1,661	.....	200	118	63	113	.....	.....	29	.....	.....	.....	.....	2,612
162	736	9,679	.....	2,051	188	671	1,241	.....	68	119	.....	.....	.....	938	21,543
.....	639	10,277	.....	1,413	.....	313	810	.....	273	26	.....	.....	.....	189	16,241
24	159	1,626	82	.....	81	181	445	18	35	.....	20	511	.....	38	5,280
2,806	8,202	107,736	1,579	22,430	1,248	6,320	11,884	156	2,082	4,972	300	15	5	6,297	199,629
.....	881	10,436	655	500	.....	1,253	1,686	69	208	63	.....	174	.....	314	16,729
.....	72	1,389	55	.....	.....	132	270	.....	.....	.....	.....	.....	6	95	2,450
.....	647	8,018	42	1,080	.....	162	358	59	14	.....	.....	.....	.....	14	9,739
.....	226	3,053	.....	.....	99	303	582	.....	57	11	18	24	33	14	4,695
116	152	2,005	.....	.....	.....	116	228	.....	29	99	.....	.....	.....	9	3,051
$28,148	25,214	$342,962	$4,216	$41,347	$4,123	20,252	$39,124	$925	$6,969	$26,753	$10,316	$3,291	$19,284	$117,965	$982,503
$416	7,686	$94,816	.....	$1,944	$4,664	5,105	$10,128	.....	$2,315	$823	.....	.....	$1,065	$12,086	$174,291
.....	66	1,000	.....	.....	.....	31	250	.....	.....	.....	.....	.....	.....	.....	2,100
428	6,536	70,421	.....	1,566	.....	4,055	5,373	$357	181	722	.....	$123	368	1,049	97,268
.....	1,598	15,998	.....	4,648	1,848	1,014	4,569	.....	1,683	136	.....	.....	.....	1,405	35,264
.....	697	12,100	.....	249	159	601	1,265	4	57	582	.....	.....	.....	506	21,950
87	174	3,264	.....	218	.....	140	322	.....	20	193	.....	.....	.....	.....	4,375
145	172	2,112	$31	.....	.....	203	417	.....	98	28	.....	.....	.....	22	4,241
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	394
.....	2,269	36,505	109	728	.....	975	2,224	.....	215	158	$1,266	.....	10	522	43,749
.....	24	188	.....	.....	.....	4	5	.....	.....	.....	.....	.....	.....	.....	886
1,403	3,123	42,738	63	.....	.....	1,337	2,044	390	904	.....	.....	.....	.....	19	50,900
120	2,090	22,638	132	134	.....	1,735	3,347	.....	89	406	.....	.....	291	473	30,890
$2,599	24,435	$301,780	$335	$9,487	$6,671	15,202	$29,944	$751	$5,562	$3,048	$1,266	$123	$1,734	$16,082	$466,308
$1,419	5,595	$78,873	$287	$9,934	$7,945	5,261	$9,790	$13	$695	$256	$94	.....	$157	$7,941	$161,364
.....	3,733	64,297	383	6,918	1,217	1,053	2,874	.....	967	633	.....	.....	.....	1,456	115,305
.....	10	95	.....	44	.....	12	26	.....	254	.....	.....	.....	.....	58	720
37	24	454	140	246	39	36	81	38	32	.....	.....	.....	.....	43	1,883
.....	3,692	64,836	123	9,719	.....	1,905	6,101	.....	3,332	173	.....	.....	.....	1,679	95,309
.....	4	79	.....	.....	.....	.....	.....	23	.....	.....	.....	.....	.....	17	826
$1,456	13,058	$208,634	$933	$26,861	$9,201	8,267	$18,872	$74	$5,280	$1,062	$94	.....	$157	$11,194	$375,407
.....	75	$831	.....	.....	.....	75	$131	.....	.....	.....	.....	.....	.....	.....	$962
.....	2,527	28,133	$612	$16,768	.....	2,821	4,984	$47	$950	$933	.....	.....	.....	$800	54,670
.....	233	3,240	491	141	.....	65	93	.....	225	.....	.....	.....	.....	.....	4,856
.....	8,360	78,079	.....	11,665	.....	3,525	4,880	.....	.....	76	.....	.....	$43	.....	98,916
$3,596	691	13,062	.....	.....	.....	437	1,020	.....	.....	551	$1,079	.....	.....	2,913	29,556
.....	6	101	.....	.....	.....	6	14	3,775	.....	.....	.....	.....	.....	36	4,099
.....	3,860	58,695	8,197	2,128	.....	2,033	5,689	.....	187	.....	.....	.....	.....	1,502	83,013
.....	460	4,863	.....	.....	.....	424	631	.....	25	.....	.....	.....	.....	100	5,719
1,003	.....	.....	.....	.....	.....	.....	.....	.....	.....	74	.....	.....	.....	42	3,190
.....	82	1,156	.....	.....	.....	72	288	.....	.....	90	.....	.....	.....	.....	1,601
.....	.....	.....	.....	.....	.....	240	599	.....	.....	.....	.....	.....	.....	42	641
.....	.....	.....	.....	.....	.....	.....	.....	.....	69	443	.....	.....	.....	445	1,425
.....	626	6,519	.....	1,357	.....	400	400	.....	48	1,200	.....	3,207	30	11,157	69,016
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,011	10,104	.....	.....	.....	575	1,052	.....	235	.....	.....	.....	.....	.....	13,724
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	617	.....	10	59	.....	.....	.....	.....	.....	.....	.....	696
.....	20	230	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	230
.....	46	1,375	.....	.....	.....	32	108	.....	61	.....	.....	.....	.....	153	1,703
$4,599	17,997	$206,388	$9,300	$32,676	.....	10,715	$19,948	$3,822	$1,800	$3,367	$1,079	$3,207	$73	$17,190	$374,017
.....	373	$6,421	.....	.....	.....	617	$1,164	.....	.....	.....	.....	.....	.....	.....	$13,770
$1,454	4,307	60,084	$80	$21	$155	4,800	7,689	.....	$1,246	$615	$46	.....	.....	$1,371	75,842
.....	208	2,277	34	.....	.....	238	500	$11	.....	.....	.....	.....	.....	154	7,756
.....	240	1,902	.....	250	.....	220	347	.....	.....	.....	.....	.....	.....	.....	2,499
.....	1,425	14,236	.....	.....	.....	329	517	.....	.....	.....	.....	.....	.....	304	15,734
.....	34	517	.....	.....	.....	40	75	.....	.....	.....	.....	.....	.....	.....	592
.....	20	358	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	358
.....	8	138	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	138
.....	150	1,824	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	1,834
$1,454	6,765	$87,757	$114	$271	$155	6,244	$10,292	$11	$1,246	$615	$46	.....	.....	$1,839	$118,523
$38,779	150,651	$1,907,647	$22,406	$134,691	$21,575	94,232	$202,811	$5,855	$32,394	$114,750	$12,885	$7,587	$34,807	$258,524	$3,737,063

United States Crude and Waste Rubber Imports for 1922 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1922	Totals 1921	Balata	Miscellaneous	Waste
January ..... *tons*	20,774	916	161	16	....	....	21,867	14,177	42	126	85
February	27,270	1,347	301	14	....	41	28,973	8,641	28	448	6
March	27,711	451	326	3	154	57	28,702	14,416	17	479	61
April	13,910	462	5	2	65	....	14,444	17,269	8	122	....
Totals, 4 months, 1922..... *tons*	89,665	3,176	793	35	219	98	93,986	.....	95	1,175	152
Totals, 4 months, 1921.....	49,834	3,941	689	11	25	3	.....	54,503	159	622	1,460

Compiled by the Rubber Association of America, Inc.

United Kingdom Rubber Statistics

Imports

	March 1921 Pounds	March 1921 Value	March 1922 Pounds	March 1922 Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements....	4,958,100	£267,451	1,962,700	£76,842
Federated Malay States	5,326,400	303,988	5,710,100	268,136
British India.....	1,480,200	84,348	543,800	22,967
Ceylon and Dependencies	4,318,200	233,970	2,026,800	90,060
Other Dutch Possessions in Indian Seas.....	584,800	33,841	352,800	14,540
Dutch East Indies (except other Dutch Possessions in Indian Seas)	2,374,900	134,754	798,600	33,544
Other countries in East Indies and Pacific not elsewhere specified...	215,400	11,041	218,100	9,349
Brazil	766,100	34,668	375,300	17,330
Peru	.....	.....	.....	.....
South and Central America (except Brazil and Peru).....	11,200	560	27,400	918
West Africa				
Gold coast.....	32,200	1,699	6,800	241
Other parts of West Africa	29,300	1,512	35,400	1,472
East Africa (including Madagascar)	2,200	115	.....	.....
Other countries.....	69,400	3,229	32,100	1,444
Totals	20,168,400	£1,111,176	12,089,900	£536,843
Waste and reclaimed rubber	152,500	3,432	46,300	655
Gutta percha and balata..	328,200	55,679	349,500	44,490
Rubber substitutes.....	15,100	682	.....	.....
Totals, unmanufactured	20,664,200	£1,170,969	12,485,700	£581,988
MANUFACTURED				
Boots and shoes. *dozen pairs*	5,004	£15,039	16,563	£33,319
Waterproof clothing.....	.....	288	.....	617
Insulated wire.....	.....	1,684	.....	11,188
Tires and tubes.....	.....	267,910	.....	417,028
Other rubber manufactures	.....	65,928	.....	84,631
Totals, manufactured.	.....	£350,849	.....	£546,783

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	380,800	£6,567	370,900	£7,810
Rubber substitutes.....	64,000	1,791	71,200	4,664
Totals, unmanufactured	444,800	£8,358	442,100	£12,474
MANUFACTURED				
Boots and shoes. *dozen pairs*	7,789	£17,574	11,107	£20,465
Waterproof clothing.....	.....	34,998	.....	66,008
Insulated wire.....	.....	164,576	.....	48,527
Submarine cables.....	.....	86,682	.....	17,773
Tires and tubes.....	.....	244,395	.....	230,817
Other rubber manufactures	.....	207,045	.....	263,041
Totals, manufactured.	.....	£755,270	.....	£646,631

Exports—Colonial and Foreign

UNMANUFACTURED				
Crude rubber				
To Sweden, Norway and Denmark	51,800	£2,664	156,000	£5,650
Germany	701,200	29,916	2,324,100	87,292
Belgium	52,700	3,828	266,100	10,228
France	1,036,100	50,049	3,010,600	128,039
Spain	53,700	3,240	39,600	1,775
Italy	128,800	6,634	583,400	24,437
Austria	237,100	13,078	.....	.....
Other European countries	88,000	3,534	406,100	12,867
United States.....	2,238,500	95,823	3,661,400	142,335
Canada	.....	.....	136,300	4,681
Other countries....	3,400	209	57,700	2,728
Totals	4,591,300	£208,975	10,641,300	£420,032

	March 1921 Pounds	March 1921 Value	March 1922 Pounds	March 1922 Value
Waste and reclaimed rubber	.....	.....	.....	.....
Gutta percha and balata.	63,000	£12,263	83,400	£11,068
Totals, unmanufactured	4,654,300	£221,238	10,724,700	£431,100
MANUFACTURED				
Boots and shoes. *dozen pairs*	165	£427	477	£2,004
Waterproof clothing.....	.....	27	.....	4
Tires and tubes.....	.....	22,401	.....	45,041
Insulated wire.....	.....	200	.....	709
Other manufactures.....	.....	1,457	.....	1,456
Totals, manufactured	.....	£24,512	.....	£49,214

The Market for Rubber Scrap

New York

The lack of trade interest in rubber scrap still persists and no doubt will continue while very low prices prevail for crude rubber. There is practically no sale for any grade of rubber scrap except boots and shoes. Some export demand for red inner tubes has been supplied and a slight improvement is perceptible in shoes and No. 1 inner tubes.

Reclaimers are promising orders to come shortly and dealers are hopeful that the worst is over with the seasonal revival of the manufacturing trade.

Quotations for Carload Lots Delivered

May 25, 1922

Prices subject to change without notice

Boots and Shoes		
Boots and shoes	*lb.*	$0.02¼@$0.03
Trimmed arctics	*lb.*	.02 @
Untrimmed arctics	*lb.*	.01¾@
Hard Rubber		
Battery jars, black compound	*lb.*	@
No. 1, bright factory	*lb.*	.05 @ .06
Inner Tubes		
No. 1	*lb.*	.03¾@ .04
Compounded	*lb.*	.02¾@ .03
Red	*lb.*	.03 @
Mechanicals		
Black scrap, mixed, No. 1	*lb.*	*.02¾@ .03
No. 2	*lb.*	*.01½@ .02
Heels	*lb.*	*.02½@ .03
Horse-shoe pads	*lb.*	*.02½@ .03
Hose, air brake	*lb.*	*.01 @ .01½
fire, cotton lined	*lb.*	*.01 @
garden	*lb.*	.07 @
Matting	*lb.*	*.01 @
Red packing	*lb.*	*.04½@ .05
Red scrap, No. 1	*lb.*	*.07 @ .08
No. 2	*lb.*	.05½@ .06
White scrap, No. 1	*lb.*	*.07 @ .07½
No. 2	*lb.*	.06 @ .06½
Tires		
PNEUMATIC—		
Auto peelings	*lb.*	.01½@
Bicycle	*lb.*	.01 @ .01¼
Standards white auto.	*lb.*	*.02¼@ .02¾
Mixed auto	*lb.*	.00¾@ .01
Stripped, unguaranteed	*lb.*	*.01 @ .01½
White, G. & G., M. & W., and U. S.	*lb.*	*.02¾@
SOLID—		
Carriage	*lb.*	*.02¼@ .02¾
Irony	*lb.*	@
Truck, clean	*lb.*	*.01½@ .02

*Nominal.

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Dating from April 26 there was a very persistent rise in the price of middling spot cotton, amounting in the interval of a month to 380 points. During the first two weeks in May there was a reaction from 21.15 to 19.20 cents, a drop of 95 points which held only for a day, the subsequent advance being attributable to continuation of heavy rains and flood conditions in the Southwest and the lower Mississippi Valley, and decreased prospects of an average crop.

According to figures compiled by the Department of Commerce, the world's consumption of American cotton this season is likely to reach 13,000,000 bales, which would leave on August 1 a world's carryover of only 4,291,000 bales compared with 9,351,000 bales a year ago.

EGYPTIAN COTTON. Egyptian grades have been quiet and exceedingly firm. At date medium grade Uppers cannot be purchased much under 27 cents. Low grade Uppers have practically disappeared from the market. Practically the same may be said of Sakellaridis, although stocks of the medium grade are still very large and it is worth 36 cents, ex duty.

The new crop continues to be favored with good weather, but there is no change for the better as regards the prospects of the water supply.

ARIZONA COTTON. Arizona cotton has been very active, and the stock in and near the Salt River Valley is decreasing rapidly. Good medium cotton can be bought at 35 cents.

SEA ISLAND. Some business has been done at a basis of around 43 cents for extra choice. The supply is not large and is firmly held.

DRILLS, DUCKS, AND OSNABURGS. In these lines merchandise is moving in a very encouraging way. Prices are firm and trading active.

RAINCOAT FABRICS. Business is reported very dull and buying in small quantities. Buyers will not anticipate because the outlook does not warrant stocking up and if the market advances they will be satisfied to pay the increase.

SHEETINGS. The market for sheetings is active and goods are moving in good volume at prices which are likely to be exceeded if shortage of cotton is realized a few months hence.

TIRE FABRICS. Manufacturers of tires are not buying freely at the present market rate of 54 cents a pound for 17¼-ounce square weave carded peeler. Many small manufacturers are contracting for their requirements until September. Makers not so protected are likely to pay higher a little later.

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

AKRON OFFICE
Second National Building

NEW YORK OFFICE
Fisk Building
Broadway at 57th Street

New York Quotations

May 25, 1922

Prices subject to change without notice

Burlaps

40—7-ounce	100 yds.	@
40—7½-ounce	$6.30	@$6.35
36—7½-ounce		@
40—8-ounce	6.35	@ 6.50
40—10-ounce	9.20	@ 9.30
40—10½-ounce	9.35	@ 9.40

Drills

38-inch 2.00-yard	yard	.18½@
40-inch 3.47-yard		.11 @
52-inch 1.90-yard		.20½@
60-inch 1.52-yard		.25¾@

Duck

CARRIAGE CLOTH

38-inch 2.00-yard enameling duck	yard	.18½@
40-inch 1.47-yard		.24½@
72-inch 16.66-ounce		.40½@
72-inch 17.21-ounce		.41⅞@

MECHANICAL

Hose	pound	.34 @
Belting		.35 @

Osnaburgs

40-inch 2.35-yard	.15 @
40-inch 2.48-yard	.14⅛@
37½-inch 2.42-yard	.14½@

Hollands, 40-inch

DEAD FINISH

Standard, 36-inch, white	.18 @
36-inch, colors	.18 @
42-inch, white	.22 @
42-inch, colors	.22 @

FLAT FINISH

Imperial, 36-inch, white	.14 @
36-inch, colors	.14 @
42-inch, white	.17 @
42-inch, colors	.17 @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	.11¼@
60 x 48		.10¾@
Cashmeres, cotton and wool, 36-inch, tan		.50 @
Plaids 60 x 48		.11½@
56 x 44		.11 @
Surface prints 60 x 48		.12¼@
64 x 60		.13 @

Fabric Market—*Continued*

Sheetings, 40-inch

48 x 48, 2.50-yard	*yard*	$0.13¼@
48 x 48, 2.85-yard		.11⅞@
64 x 68, 3.15-yard		.13½@
56 x 60, 3.60-yard		.10½@
48 x 44, 3.75-yard		.09¼@

Silks

Canton, 38-inch	*yard*	.29½@
Schappe, 36-inch		.45 @

Tire Fabrics

BUILDING

17¼-ounce Sakellaridis, combed	*pound*	.80	@
17¼-ounce Egyptian, combed		.70	@
17¼-ounce Egyptian, carded		.63	@
17¼-ounce Peeler, combed		.70	@
17¼-ounce Peeler, carded		.54	@

CORD

15-ounce Egyptian, combed	*pound*	.70	@	.73

BICYCLE

8-ounce American	*pound*		@
10-ounce American			@

CHAFER

9¼-ounce Sea Island	*pound*		@
9¼-ounce Egyptian, carded		.73	@
9¼-ounce Peeler, carded		.64	@

Judicial Decisions

Decisions of the Federal Trade Commission

FEDERAL TRADE COMMISSION VS. DIAMOND HOLFAST RUBBER CO., United States of America before Federal Trade Commission at office of Federal Trade Commission. Decided February 25, 1922. Docket No. 788.

In the case of the complaint of the Federal Trade Commission the claim was made that the Diamond Holfast Rubber Co., Atlanta, Georgia, was using unfair methods of competition in commerce. It was ordered that the Diamond Holfast Rubber Co., its officers and agents, cease and desist from using, as a part of the corporate name, the word D-I-A-M-O-N-D or any word or combination of words likely to be confused with the name of The Diamond Rubber Company; from using the word D-I-A-M-O-N-D or the figure of a diamond, or any symbol or mark likely to be confused therewith, upon or in connection with the sale of rubber goods; and from directly or indirectly suggesting by the use of a word, mark or label or otherwise that the goods are goods of The Diamond Rubber Company.

Treasury Decisions

No. 44919. Protest 939154 of George S. Bush & Co., Inc. (Seattle).

SOLE AND HEEL ATTACHMENTS.—Rubber sole and heel attachments, with nails or pegs, classified as wearing apparel of cotton and india rubber at 30 per cent ad valorem under Paragraph 256 Tariff Act of 1913, are claimed dutiable as manufactures in chief value of india rubber at 10 per cent under Paragraph 368.

Opinion by Weller, G. A.: Former precedents, in particular G. A. 8445 (T. D. 38763), show that the sole and heel attachments in question are dutiable as manufactures of india rubber under Paragraph 368.

No. 44946.—Protest 940889 of Poirier & Lindeman Co. (New York).

ELASTIC CORD.—Goods invoiced as silk cord elastic and classified as silk and india rubber braids at 60 per cent ad valorem under paragraph 358, tariff act of 1913, are claimed under paragraph 316 as silk and india rubber cord at 45 per cent.

Opinion by Howell, G. A. The merchandise was found to be silk and india rubber cord, and the claim under paragraph 316 was therefore sustained.

The Market for Chemicals and Compounding Ingredients

New York

Rubber compounding ingredients, particularly those which enter into automobile tire manufacture, have shown increased activity and steady demand, in a few instances taxing producing capacity. Advances in price have been few and unimportant except in the case of carbon black which is in short supply.

ANILINE. This material continues without market interest. Stocks are large, demand light, and prices weak.

ANTIMONY SULPHIDES. The excess supplies are expected to move with the spring demand from inner tube manufacturers and the druggists' sundries trade.

BARYTES. Demand rules active, prices are well established. Lithopone manufacturers are requisitioning large supplies to maintain their own capacity production.

BENZOL. A shortage of supply continues to be the feature limiting the trade in benzol. Export trade is curtailed and domestic prices are very firm.

BLANC FIXE. Trade continued active in May and prices are firm. The situation is essentially the same as with barytes.

CADMIUM SULPHIDE. A good export demand has been noted the past month. Domestic trade is routine at advanced price.

CARBON BISULPHIDE. The bulk of this material goes into the manufacture of insecticides for which the usual active seasonal demand is now on. The requirements of rubber makers are moderate and low prices rule.

CARBON TETRACHLORIDE. Purchases by the rubber trade are in diminished volume. Supplies are more than adequate for present requirements.

CHINA CLAY. Imports have been small but foreign stocks have been in fair request. Freight rates on domestic china clay are too high and restrict its free movement in competition with the imported product.

DRY COLORS. Prices generally are firm although English vermilion was advanced 7 cents early in the month.

GAS BLACK. Gas black is scarce and held at high prices ranging upward from 13 and 14 cents for the uncompressed. Tire makers did not carry over their usual large stocks of gas black from last fall and producers have not been able to meet the extra heavy spring demand. The situation is more or less abnormal but should work out in time, especially as new contract requirements will be determined shortly for the half-yearly period beginning July 1.

LITHARGE. Two advances of ¼ cent in price have taken place, one during the last week of April and the other about three weeks later, due to increased cost of production. The improvement in the rubber trade has been reflected by the improved call for litharge by mechanical rubber goods and tire makers.

LITHOPONE. The increased capacity of lithopone producers is reported to be taxed to the utmost to meet the increasing use of the material, both for paint purposes and tire manufacture. A record year in production is predicted.

SOLVENT NAPHTHA. Water white grade is in good request, supplies are short and prices firm.

SUBLIMED LEAD. A ¼-cent advance effective the last week in April did not deter improving conditions of trade which continue to grow better in consuming quarters.

SULPHUR. There has been no change in price and requests for supplies are routine.

SULPHUR CHLORIDE. There is an overabundant supply and no trade movement.

TALC. Importations are small. The demand is routine. Domestic grades rule lower in price than the foreign.

WHITING. There is a steady routine call for stocks and prices are lower.

ZINC OXIDE. Market conditions are satisfactory, prices are low and tire manufacturers are buying freely.

New York Quotations

May 25, 1922

Prices subject to change without notice

Accelerators, Organic

Accelerene (f. o. b. English port)	lb.	13s.	@
Adco	lb.	$0.75	@
Aldehyde ammonia crystals	lb.	.95	@
Aniline (f. o. b.) factory	lb.	.16½	@ .19
Diphenyl guanidine	lb.	1.30	@ 1.50
Ethylidene aniline	lb.	.75	@ .85
Excellerex	lb.	.40	@ .45
Formaldehyde aniline	lb.	.50	@
Hexamethylene tetramine	lb.	.67	@ .75
Lead oleate (bbls.)	lb.	.14	@ .15
Methylene aniline	lb.	.34	@ .40
No. 999	lb.	.14	@
Paradin	lb.	.42	@
Paraphenylene diamine	lb.	1.60	@ 1.70
Speed-X			@
Super-Sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .30
Super-X	lb.	.50	@
Super-XX	lb.	.65	@
Thiocarbanilide	lb.	.28	@ .40
Vul-Ko-Cene	lb.	.35	@
XLO	lb.	1.20	@

Accelerators, Inorganic

Lead, dry red	lb.	.08¾	@ .09
white, basic carbonate	lb.	.07	@ .07¾
Lime, flour, superfine	lb.	.02¼	@ .02½
Litharge, domestic	lb.	.08¼	@ .08½
imported	lb.	.17	@
Orange, mineral	lb.	.11¾	@ .13¾
Magnesia, carbonate, light (bags)	lb.	.05½	@
calcined, light (bbls.)	lb.	.24	@ .25
calcined, ex. light (bbls.)	lb.	.45	@
calcined, md. light (bbls.)	lb.	.16	@
calcined, heavy (bbls.)	lb.	.05½	@ .06

Acids

Acetic 28% (bbls.)	cwt.	2.25	@ 2.50
glacial, 99%	cwt.	8.50	@ 9.50
Cresylic (97% straw color)	gal.	.53	@ .55
(95% dark)	gal.	.48	@ .50
Muriatic, 20 degrees	cwt.	1.10	@ 1.25
Nitric, 36 degrees	cwt.	5.00	@ 6.00
Sulphuric, 66 degrees	ton	16.00	@17.00

Alkalies

Caustic soda	cwt.	3.50	@ 3.75
Soda ash, 58% (bbls.)	cwt.	2.00	@ 2.10

Colors

BLACK

Bone, powdered	lb.	.05½	@ .07½
Carbon black	lb.	.13	@ .20
pressed	lb.	.14	@ .24
Dipped goods	lb.	1.00	@
Drop	lb.	.07½	@ .16
Hyposulphite of lead	lb.	.20	@ .25
Iron oxide, precipitated	lb.	.10½	@ .12
Ivory black	lb.	.15	@ .45
Lampblack	lb.	.17	@ .45
Micronex	lb.	.13½	@ .20
Oil-soluble aniline	lb.		@
Rubber maker's black (non-fiying)	lb.	.40	@

BLUE

Cobalt	lb.	.21	@ .26
Dipped goods	lb.	1.00	@
Prussian	lb.	.50	@
Rubber maker's blue	lb.	3.50	@
Ultramarine	lb.	.10	@ .35

BROWN

Iron oxide	lb.	.05	@ .10
Sienna, Italian, raw and burnt	lb	.06	@ .07
Umber, Turkey, raw and burnt	lb.	.05	@ .07½

GREEN

Chrome, light	lb.	.30	@ .32
medium	lb.	.35	@ .36
dark	lb.	.36	@ .45
commercial	lb.	.12	@
tile	lb.	.11	@ .13
Guignet	lb.		@
Dipped goods	lb.	1.00	@
Oxide of chromium	lb.	.45	@ .57
Rubber makers' green	lb.	3.50	@

RED

Antimony, crimson	lb.	.36	@ .48
Antimony, golden	lb.	.18	@ .20
golden 1	lb.	.30	@
golden 2	lb.	.25	@
7-A	lb	.35	@
vermilion	lb.	.55	@
red sulphuret	lb.	.20	@
Arsenic sulphide, red	lb.	.12	@
lemon	lb.	.75	@ 1.00
orange	lb.	.75	@ 1.00
Cadmium sulphide, cold cure	lb.	1.70	@ 1.85
hot cure	lb.	1.40	@ 1.55
Dipped goods, red	lb.	$1.00	@
purple	lb.	1.00	@
orange	lb.	1.00	@
Indian	lb.	.08	@$0.12
Indian maroon, English	lb.	.10	@ .12
Iron oxide, reduced			
grades	lb.	.10	@ .12
pure bright	lb.	.12	@ .14
Maroon oxide	lb.	.08	@ .12
Red oxide, crimson	lb.	.05½	@
English	lb.	.13	@
Spanish	lb.	.03½	@ .04½
Oil-soluble aniline, red	lb.	1.70	@ 1.95
orange	lb.	1.45	@
Oximony	lb.	.16	@
Para toner	lb.	1.25	@ 1.40
Rubber makers' red (four shades)	lb.	3.50	@
purple	lb.	2.50	@
Spanish natural	lb.	.03½	@ .04½
Toluidine toner	lb.	2.25	@ 2.50
Venetian	lb.	.02½	@ .05½
Vermilion, American	lb.	.25	@ .30
English quicksilver	lb.	.95	@ 1.00

WHITE

Albalith	lb.	.06	@ .06½
Aluminum bronze	lb.		@
Lithopone, domestic (factory)	lb.	.06	@ .06½
Zinc oxide:			
American Horse Head (factory):			
Special	lb.	.08	@ .08½
XX red	lb.	.07½	@ .08
French process, Florence brand (factory):			
White seal	lb.	.11	@ .11¼
Green seal	lb.	.09¾	@ .10¼
Red seal	lb.	.08¾	@ .09¼
Azo (factory):			
ZZZ (lead free)	lb.	.07½	@ .08
ZZ (under 5%) leaded	lb.	.07¼	@ .07½
(8/10% leaded)	lb.	.07	@ .07½

YELLOW

Arsenic, yellow sulphide	lb.		@
Cadmium, sulphide, light	lb.	1.85	@
Chrome, light and med	lb.	.16½	@ .17
Dipped goods	lb.	1.00	@
India rubber	lb.	.87½	@
Ochre, domestic	lb.	.03	@ .03¼
imported	lb.	.03¼	@ .03¾
Oil-soluble aniline	lb.	1.55	@
Rubber makers' yellow	lb.	3.50	@

Compounding Ingredients

Aluminum flake (carloads)	ton	25.00	@29.45
hydrate, light	lb.	.19	@ .21
Ammonia carbonate	lb.	.08¾	@ .09¾
Asbestine	ton	20.00	@25.00
Aluminum silicate, C. L.	lb.	12.00	@
Barium, carbonate,	ton	60.00	@65.00
dust	ton	100.00	@
Barytes, pure white (carloads)	ton	23.00	@
off color (carloads)	ton	15.00	@17.00
uniform floated (carloads)	ton	23.00	@
Basofor	lb.	.04¾	@
Beta-naphthol	lb.	.25	@
Blanc fixe	lb.	.04	@ .04½
Bone ash	lb.		@
Carrara filler (factory)	ton	18.00	@
Chalk, precipitated, extra light (f.o.b. factory)	lb.	.03½	@ .04¼
heavy (f.o.b. factory)	lb.	.02½	@ .03¼
China, clay, Dixie	ton	22.00	@ 32.00
Blue Ridge	ton	22.00	@ 32.00
Cotton linters clean mill-run	lb.	.04¾	@
Fossil flour (powdered)	ton	60.00	@
(bolted)	ton	60.00	@
Glue, high grade	lb.	.30	@ .40
medium	lb.	.20	@ .26
low grade	lb.	.15	@ .18
Graphite, flake	lb.	.05	@ .12
amorphous	lb.	.05	@
Infusorial earth (powd.)	ton	60.00	@
(bolted)	ton	65.00	@
Liquid rubber	lb.	.15	@
Mica, powdered	lb.		@
Pumice stone, powdered	lb.	.03	@ .05
Rotten st., powd. (bbls.)	lb.	.02½	@ .04½
Silica, gold bond	ton	40.00	@50.00
silver bond	ton	30.00	@35.00
Soap bark, cut	lb.	.08½	@ .09
Soapstone, powdered-gray (carloads)	ton	12.00	@
Starch, powd. corn (bags)	cwt.	2.32	@ 2.42
(bbls.)	cwt.	2.60	@ 2.70
Talc, soapstone	ton	22.50	@
Terra blanche	ton	23.00	@25.00
Tripoli flour, air-floated, cream or rose (factory)	ton	25.00	@30.00
white (factory)	ton	27.50	@32.50
Tyre-lith	ton	85.00	@
Whiting, Alba	cwt.		@
commercial	cwt.	1.00	@ 1.10
Danish	ton	22.00	@25.00
English cliffstone	cwt.	1.60	@ 2.00
gilders (bolted)	cwt.	1.15	@ 1.25
K. T.	ton	14.00	@
Paris, white, American	cwt.	1.25	@ 1.35
Perfection	ton	$20.00	@$25.00
Plymouth	ton	16.00	@18.00
Quaker	ton	13.00	@15.00
Superfine	ton	13.00	@
Wood pulp, XXX (f.o.b. factory)	ton	30.00	@
X (f.o.b. factory)	ton	25.00	@

Mineral Rubber

Gilsonite	ton	70.00	@
Genasco (factory)	ton	50.00	@52.00
Hard hydrocarbon	ton	32.00	@42.00
Soft hydrocarbon	ton	30.00	@35.00
320/340 M. P. hydrocarbon	ton	45.00	@50.00
300/310 M. P. hydrocarbon	ton	40.00	@42.50
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid (factory)	ton	35.00	@75.00
M. R. granular (factory)	ton	54.50	@72.50
Rubrax (factory)	ton	50.00	@
States "A"	ton	45.00	@
No. 1	ton	35.00	@
Synpro, gran. M. R. (fac.)	ton	54.50	@69.50

Oils

Avoilas compound	lb.	.14	@
Castor, No. 1, U. S. P.	lb.	.12½	@
No. 3, U. S. P.	lb.	.11½	@
Corn	lb.	.12	@
Cotton	lb.	.12½	@
Glycerine	lb.	.15	@ .15½
Halowax (500-lb. steel drums, returnable)	lb.	.25	@ .27
Linseed, raw, domestic	gal.	.92	@
Palm lagos	lb.	.07½	@ .07¼
Palm, niger	lb.	.08¼	@
Peanut	lb.	.11½	@
Petrolatum, standard	lb.	.05	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.85	@ .95
Rapeseed, refined	lb.	.12½	@
blown	lb.	.14	@
Rosin	gal.	.36	@ .40
Synpro	gal.	.40	@ .70
Soya bean	lb.	.12	@
Tar	gal.	.25	@ .28

Resins and Pitches

Cumar resin hard	lb.	.09	@ .15
soft	lb.	.09	@ .15
Tar, retort	bbl.	9.00	@ 9.50
kiln	bbl.	8.50	@
Pitch, Burgundy	lb.	.05	@
coal tar	lb.	.01½	@
hardwood	ton	60.00	@
pine tar	lb.	.03½	@
ponto	lb.	.08	@
Rosin, K (bbl.)	280 lbs.	6.50	@
strained (bbls.)	280 lbs.	6.05	@
Shellac, fine orange	lb.	.76	@ .78

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	.08½	@ .10
Benzol (90%, drums [7.21 lbs. per gal.])	gal.	.30	@ .32
pure (drums)	gal.	.32	@ .34
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.07	@ .07½
tetrachloride (drums. [13.28 lbs. per gal.])	lb.	.10	@ .13
Motor gasoline (steel bbls.)	gal.	.27	@
Naphtha, V. M. & P. (steel bbls.)	gal.	.26	@
solvent (drums extra)	gal.	.23	@
Paracymene (factory)	lb.	.15	@
Toluol, pure (7.21 lbs. per gal.)	gal.	.30	@ .35
Turpentine, spirits	gal.	.98	@
wood	gal.	.95	@

Substitutes

Black	lb.	.08½	@ .14
Brown	lb.	.10	@ .15
White	lb.	.09	@ .16
Brown factice	lb.	.08	@ .14½
White factice	lb.	.09	@ .15½

Vulcanizing Ingredients

Sulphur chloride	lb.	.04½	@ .06
(jugs)	lb.	.20	@
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.55	@ 2.90
(bags)	cwt.	2.30	@ 2.65
Sulphur flour, rubber 100% pure (bbls.)	240 lbs.		@
(bags)	150 lbs.		@
Superfine 99½% pure (bbls.)	210 lbs.		@
(bags)	cwt.		@

(See also Colors—Antimony).

Waxes

Wax, beeswax, white, com.	lb.	.36	@ .38
ceresine, white	lb.	.09	@ .10
carnauba	lb.	.15	@ .48
montan	lb.	.05¼	@ .05½
ozokerite, black	lb.	.22	@ .27
green	lb.	.26	@ .27
paraffine	lb.	.25	@
sweet wax	lb.	.12	@

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Vol. 66 JUNE 1, 1922 No. 3

TABLE OF CONTENTS

Editorials	Pages
Hard Rubber Sonorescence	597
Rubber Thread Looking Up	597
Loss Sharing Plan Wanted	597-598
Standardization and Progress	598
Extracting the Splinters From Rubber	598
Minor Editorial	598
Radio Equipment and Its Dependence on Rubber. By William S. Cobb, M. E. ...Illustrated	599-601
Splinters in Plantation Rubber	602-604
Squires Process for Making Golf Ball Centers... Illustrated	604
Glossary of Words and Terms Used in the Rubber Industry—XV. By Henry C. Pearson	605-606
Rubber Paper and Its Production	606-607
Asbestos Mittens in the Rubber Mill Illustrated	607-608-609
Editor's Book Table	608
"Facts Affecting the Importation of Rubber Products Into Italy, Norway and Denmark." "The Chemistry of the Non-Benzenoid Hydrocarbons and Their Simple Derivatives." "Advertising the Technical Product." "Women in Rhode Island Industries." "The Growing Menace of Benzene (Benzol) Poisoning in American Industry."	
New Trade Publications	608
Golf Ball Tapes and Windings ...Illustrated	609-610
Automobile Industry in 1921	610
Chemistry	
What the Rubber Chemists Are Doing	611-612
Recently Published Articles Relating to Rubber..	612-613
Methods of Analysis	613
Chemical Patents	614
Laboratory Apparatus ...Illustrated	614
New Machines and Appliances ...Illustrated	615-617
New Non-Skid Cutting Machine. Connecting a Gage to an Electric Buzzer or Bell. Calender for Hard Rubber Sheet. Friction Clutches for Rubber Machinery. Pneumatic Tire Changer. Udylite Anti-Rust Process. Heavy Tire Applying Press. Machine for Making Standard Plantation Rubber. A Direct Water System Pump. Cleaning Device for Machine Shop. Tire Repair Airbag.	
Machinery Patents ...Illustrated	617-618
Core and Vacuum Process for Making Balls. Device for Perforating Blown Goods. Rubber Soles for Turn Shoes. Half Soling Tires. Other Machinery Patents.	
Process Patents	618
The Rubber Association of America—Activities of Chart	619-620
New Goods and Specialties ...Illustrated	621-623
Oblong Rubber Clasps on Garters That Sew On. "Las-Stik" for Blowouts. Balanced Golf Ball Meridian Marked. Syphon for Gasoline. Golf Machine Shows Yardage. Air Valve Lock for Tire Valves. Strengthening Plasters Contain Rubber. Rubber Heel for Weak Arches. Rubber Bibs with Sleeves. New Brands Added to Culp Tire Line. Rubber Tired Coaster. "Gym Bal" Shoe for Hiking and Camping. Faucet Device Lightens Washing. Tire Valve Has Visible Register. "Duofold" Pen Has "Lucky Curve." Gingham Corsets. Leatherette Bag. Rolled Top Hosiery with Elastic Insert. Golf Ball Wound by Improved Method. Bag for Bathing Suits. Pedal Mat for Ford Touring Car or Roadster. Molded Bathing Cap. Rubber Set Glass. Rubber Lined Barrel for Shipping Chemicals. "Radion" for Radio Parts. The Poppy Golf Ball.	
Inquiries and Trade Opportunities	624
American Rubber Trade—News and Personals	
Financial Notes	625
Callaway Mills, Inc. ..Portrait Fuller E. Callaway	625
New Incorporations	626
Dividends	627
Charles Meredith DuPuy ....Portrait and Sketch	627
East and South	627-628
New Jersey	628-629
Rhode Island	629
Meade Rubber Co. ...Illustrated	630
Massachusetts	630-631
Ohio ...Illustrated	631-633
Midwest ...Illustrated	633-634
Pacific Coast ...Illustrated	634-635
Obituary Record	636
Henry J. Doughty (portrait). James Robinson. Washington I. Finch. Anthony B. Thoman.	
Tire Price Changes	636-637
Foreign Tariffs	637
Interesting Letters from Our Readers	637
Foreign Rubber News	
Great Britain ...By Our Correspondent	638-639
Germany ...By Our Correspondent	639
Planting	
Far East ...By Our Correspondent	640-641
Patents Relating to Rubber	642-643
United States. Canada. United Kingdom. New Zealand. Germany.	
Trade Marks	643-645
United States. Canada. United Kingdom. New Zealand.	
Designs....Illustrated	645
United States. Canada.	
Markets:	
Crude Rubber	646
Highest and Lowest New York Spot Rubber Prices	647
New York Average Spot Rubber Prices	647
Amsterdam Rubber Market	647
Singapore Rubber Market	647
Reclaimed Rubber	647
Rubber Scrap	656
Cotton and Other Fabrics	657-658
Chemicals and Other Ingredients	658-659
Statistics	
Brazil, Rubber Exports from Pará and Manáos	647
Java Rubber Exports	647
Malaya (British) Rubber Exports	647
Plantation Rubber Exports	649
United Kingdom, Statistics for March, 1922	656
United States:	
Crude Rubber Arrivals at Atlantic Ports as Stated by Ships' Manifests	648
Custom House Statistics	649
Exports of India Rubber Manufactures During the Calendar Year 1921	650-653
Exports of India Rubber Manufactures During March, 1922	652-655
Imports, by Months, During 1922	656
Statistics for March, 1922	649
Judicial Decisions	658